

## SEQUENCE LISTING

<110>	Haveng	ga, Menzo
	Vogels	s, Ronald
	Bout,	Abraham

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<120>	CHIMERIC ADENOVIRUSES	
<130>	2183-4123US	
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<210> 14 <211> 377

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<212> PRT

<213> Human Adenovirus 8 Fiber Protein

<400> 14

Ser Cys Ser Cys Pro Ser Ala Pro Thr Ile Phe Met Leu Leu Gln Met 1 5 10 15

Lys Arg Ala Arg Pro Ser Glu Asp Thr Phe Asn Pro Val Tyr Pro Tyr 20 25 30

Gly Tyr Ala Arg Asn Gln Asn Ile Pro Phe Leu Thr Pro Pro Phe Val 35 40 45

Ser Ser Asn Gly Phe Gln Asn Phe Pro Pro Gly Val Leu Ser Leu Lys 50 55 60

Leu Ala Asp Pro Ile Thr Ile Asn Asn Gln Asn Val Ser Leu Lys Val 65 70 75 80

Gly Gly Gly Leu Thr Leu Gln Glu Glu Thr Gly Lys Leu Thr Val Asn 85 90 95

Thr Glu Pro Pro Leu His Leu Thr Asn Asn Lys Leu Gly Ile Ala Leu 100 105 110

Asp Ala Pro Phe Asp Val Ile Asp Asn Lys Leu Thr Leu Leu Ala Gly
115 120 125

His Gly Leu Ser Ile Ile Thr Lys Glu Thr Ser Thr Leu Pro Gly Leu 130 135 140

Val Asn Thr Leu Val Val Leu Thr Gly Lys Gly Ile Gly Thr Asp Leu 145 150 155 160

Ser Asn Asn Gly Gly Asn Ile Cys Val Arg Val Gly Glu Gly Gly Gly 165 170 175

Leu Ser Phe Asn Asp Asn Gly Asp Leu Val Ala Phe Asn Lys Lys Glu 180 185 190

Asp Lys Arg Thr Leu Trp Thr Thr Pro Asp Thr Ser Pro Asn Cys Arg 195 ' 200 205

Ile Asp Gln Asp Lys Asp Ser Lys Leu Ser Leu Val Leu Thr Lys Cys 210 215 220

Gly Ser Gln Ile Leu Ala Asn Val Ser Leu Ile Val Val Ala Gly Arg 225 230 235 240

Tyr Lys Ile Ile Asn Asn Asn Thr Asn Pro Ala Leu Lys Gly Phe Thr 245 250 255

Ile Lys Leu Phe Asp Lys Asn Gly Val Leu Met Glu Ser Ser Asn 260 265 270

Leu Gly Lys Ser Tyr Trp Asn Phe Arg Asn Gln Asn Ser Ile Met Ser 275 280 285

Thr Ala Tyr Glu Lys Ala Ile Gly Phe Met Pro Asn Leu Val Ala Tyr 290 Pro Lys Pro Thr Thr Gly Ser Lys Lys Tyr Ala Arg Asp Ile Val Tyr 310 315 Gly Asn Ile Tyr Leu Gly Gly Lys Pro His Gln Pro Val Thr Ile Lys Thr Thr Phe Asn Gln Glu Thr Gly Cys Glu Tyr Ser Ile Thr Phe Asp Phe Ser Trp Ala Lys Thr Tyr Val Asn Val Glu Phe Glu Thr Thr Ser Phe Thr Phe Ser Tyr Ile Ala Gln Glu <210> 15 <211> 376 <212> PRT Human Adenovirus 9 Fiber Protein <400> 15 Ser Cys Ser Cys Pro Ser Ala Pro Thr Ile Phe Met Leu Leu Gln Met Lys Arg Ala Arg Pro Ser Glu Asp Thr Phe Asn Pro Val Tyr Pro Tyr Gly Tyr Ala Arg Asn Gln Asn Ile Pro Phe Leu Thr Pro Pro Phe Val Ser Ser Asp Gly Phe Gln Asn Phe Pro Pro Gly Val Leu Ser Leu Lys Leu Ala Asp Pro Ile Ala Ile Val Asn Gly Asn Val Ser Leu Lys Val Gly Gly Gly Leu Thr Leu Gln Asp Gly Thr Gly Lys Leu Thr Val Asn Ala Asp Pro Pro Leu Gln Leu Thr Asn Asn Lys Leu Gly Ile Ala Leu Asp Ala Pro Phe Asp Val Ile Asp Lys Leu Thr Leu Leu Ala Gly His Gly Leu Ser Ile Ile Thr Lys Glu Thr Ser Thr Leu Pro Gly Leu Ile 130 135 Asn Thr Leu Val Val Leu Thr Gly Lys Gly Ile Gly Thr Glu Ser Thr Asp Asn Gly Gly Ser Val Cys Val Arg Val Gly Glu Gly Gly Leu Ser Phe Asn Asn Asp Gly Asp Leu Val Ala Phe Asn Lys Lys Glu Asp 185

Lys Arg Thr Leu Trp Thr Thr Pro Asp Thr Ser Pro Asn Cys Lys Ile

Asp Gln Asp Lys Asp Ser Lys Leu Thr Leu Val Leu Thr Lys Cys Gly

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210 215 220

Ser Gln Ile Leu Ala Asn Val Ser Leu Ile Val Val Ala Gly Lys Tyr 230 Lys Ile Ile Asn Asn Asn Thr Gln Pro Ala Leu Lys Gly Phe Thr Ile Lys Leu Leu Phe Asp Glu Asn Gly Val Leu Met Glu Ser Ser Asn Leu 265 Gly Lys Ser Tyr Trp Asn Phe Arg Asn Glu Asn Ser Ile Met Ser Thr Ala Tyr Glu Lys Ala Ile Gly Phe Met Pro Asn Leu Val Ala Tyr Pro Lys Pro Thr Ala Gly Ser Lys Lys Tyr Ala Arg Asp Ile Val Tyr Gly Asn Ile Tyr Leu Gly Gly Lys Pro Asp Gln Pro Val Thr Ile Lys Thr 330 Thr Phe Asn Gln Glu Thr Gly Cys Glu Tyr Ser Ile Thr Phe Asp Phe Ser Trp Ala Lys Thr Tyr Val Asn Val Glu Phe Glu Thr Thr Ser Phe Thr Phe Ser Tyr Ile Ala Gln Glu 370 <210> 16 <211> 391 <212> PRT <213> Human Adenovirus 13 Fiber Protein <220> <221> Xaa (1)..(385) <222> Can be any amino acid <400> 16 Xaa Xaa Xaa Xaa Ser Ala Pro Thr Ile Phe Met Leu Leu Gln Met Lys Arg Ala Arg Ser Ser Xaa Asp Thr Phe Asn Pro Val Tyr Pro Tyr Gly Tyr Ala Arg Asn Gln Asn Ile Xaa Phe Xaa Thr Pro Pro Phe Val Xaa Ser Asp Gly Phe Lys Asn Phe Pro Pro Gly Val Leu Ser Leu Lys 55 Leu Ala Asp Pro Ile Thr Ile Ala Asn Gly Asp Val Ser Leu Lys Val 70 Gly Gly Leu Thr Leu Gln Glu Gly Ser Leu Thr Val Asp Pro Lys

Ala Pro Leu Gln Leu Ala Asn Asp Lys Leu Glu Leu Val Tyr Asp 105

Asp Pro Phe Glu Val Ser Thr Asn Lys Leu Ser Leu Lys Val Gly His Gly Leu Lys Val Leu Asp Asp Lys Ser Ala Gly Gly Leu Lys Asp Leu 135 Ile Gly Lys Leu Val Val Leu Thr Gly Lys Gly Ile Gly Ile Glu Asn 150 Leu Gln Asn Asp Asp Gly Ser Ser Arg Gly Val Gly Ile Asn Val Arg Leu Gly Thr Asp Gly Gly Leu Ser Phe Asp Arg Lys Gly Glu Leu Val Ala Trp Asn Arg Lys Asp Asp Arg Thr Leu Trp Thr Thr Pro Asp 200 Pro Ser Pro Asn Cys Lys Ala Glu Thr Glu Lys Asp Ser Lys Leu Thr Leu Val Leu Thr Lys Cys Gly Ser Gln Ile Leu Ala Thr Val Ser Ile Ile Val Leu Lys Gly Lys Tyr Glu Phe Val Lys Lys Glu Thr Glu Pro 250 Lys Ser Phe Asp Val Lys Leu Leu Phe Asp Ser Lys Gly Val Leu Leu Pro Thr Ser Asn Leu Ser Lys Glu Tyr Trp Asn Tyr Arg Ser Tyr Asp 280 Asn Asn Ile Gly Thr Pro Tyr Glu Asn Ala Val Pro Phe Met Pro Asn Leu Lys Ala Tyr Pro Lys Pro Thr Lys Thr Ala Ser Asp Lys Ala Glu 315 Asn Lys Ile Ser Ser Ala Lys Asn Lys Ile Val Ser Asn Phe Tyr Phe 330 Gly Gly Gln Ala Tyr Gln Pro Gly Thr Ile Ile Lys Phe Asn Glu Glu Ile Asp Glu Thr Cys Ala Tyr Ser Ile Thr Phe Asn Phe Gly Trp Gly Lys Val Tyr Asp Asn Pro Glu Pro Phe Asp Thr Thr Ser Phe Thr 375 Xaa Ser Tyr Ile Ala Gln Glu 390 <210> 17 290 <211> <212> PRT Human Adenovirus 14 Fiber Protein <400> 17

His Pro Phe Ile Asn Pro Gly Phe Ile Ser Pro Asn Gly Phe Thr Gln

V

Ser Pro Asp Gly Val Leu Thr Leu Lys Cys Leu Thr Pro Leu Thr Thr Thr Gly Gly Ser Leu Gln Leu Lys Val Gly Gly Leu Thr Val Asp Asp Thr Asp Gly Thr Leu Gln Glu Asn Ile Gly Ala Thr Thr Pro Leu Val Lys Thr Gly His Ser Ile Gly Leu Ser Leu Gly Ala Gly Leu Gly Thr Asp Glu Asn Lys Leu Cys Thr Lys Leu Gly Glu Gly Leu Thr Phe Asn Ser Asn Asn Ile Cys Ile Asp Asp Asn Ile Asn Thr Leu Trp Thr 100 105 Gly Val Asn Pro Thr Glu Ala Asn Cys Gln Met Met Asp Ser Ser Glu Ser Asn Asp Cys Lys Leu Ile Leu Thr Leu Val Lys Thr Gly Ala Leu Val Thr Ala Phe Val Tyr Val Ile Gly Val Ser Asn Asn Phe Asn Met 155 Leu Thr Thr Tyr Arg Asn Ile Asn Phe Thr Ala Glu Leu Phe Phe Asp Ser Ala Gly Asn Leu Leu Thr Ser Leu Ser Ser Leu Lys Thr Pro Leu Asn His Lys Ser Gly Gln Thr Trp Leu Leu Val Pro Leu Leu Met Leu Lys Val Ser Cys Pro Ala Gln Leu Leu Ile Leu Ser Ile Ile Ile Leu 215 Glu Lys Asn Lys Thr Thr Phe Thr Glu Leu Val Thr Thr Gln Leu Val 235 Ile Thr Leu Leu Phe Pro Leu Thr Ile Ser Val Met Leu Asn Gln Arg Ala Ile Arg Ala Asp Thr Ser Tyr Cys Ile Arg Ile Thr Trp Ser Trp Asn Thr Gly Asp Ala Pro Glu Gly Gln Thr Ser Ala Thr Thr Leu Val 275 280 285 Thr Ser 290

<210> 18

<211> 344

<212> PRT

<213> Human Adenovirus 20 Fiber Protein

<400> 18

Ile Gln Asn Ile Pro Phe Leu Thr Pro Pro Phe Val Ser Ser Asp Gly

Leu Gln Asn Phe Pro Pro Gly Val Leu Ser Leu Lys Leu Ala Asp Pro

Ile Ala Ile Val Asn Gly Asn Val Ser Leu Lys Val Gly Gly Ile 40 Thr Val Glu Gln Asp Ser Gly Gln Leu Ile Ala Asn Pro Lys Ala Pro Leu Gln Val Ala Asn Asp Lys Leu Glu Leu Ser Tyr Ala Tyr Pro Phe Glu Thr Ser Ala Asn Lys Leu Ser Leu Lys Val Gly Gln Gly Leu Lys Val Leu Asp Glu Lys Asp Ser Gly Gly Leu Gln Asn Leu Leu Gly Lys Leu Val Val Leu Thr Gly Lys Gly Ile Gly Val Glu Glu Leu Lys Asn Pro Asp Asn Thr Asn Arg Gly Val Gly Ile Asn Val Arg Leu Gly Lys Asp Gly Gly Leu Ser Phe Asn Lys Asn Gly Glu Leu Val Ala Trp Asn 150 Lys His Asn Asp Thr Gly Thr Leu Trp Thr Thr Pro Asp Pro Ser Pro Asn Cys Lys Ile Glu Glu Val Lys Asp Ser Lys Leu Thr Leu Val Leu Thr Lys Cys Gly Ser Gln Ile Leu Ala Thr Met Ala Phe Gln Val Val 200 Lys Gly Thr Tyr Glu Asn Ile Ser Lys Asn Thr Ala Lys Asn Ser Phe 215 Ser Ile Lys Leu Leu Phe Asp Asp Asn Gly Lys Leu Leu Glu Gly Ser Ser Leu Asp Lys Asp Tyr Trp Asn Phe Arg Ser Asp Asp Ser Ile Ile Pro Asn Gln Tyr Asp Asn Ala Val Pro Phe Met Pro Asn Leu Lys Ala Tyr Pro Lys Pro Ser Thr Val Leu Pro Ser Thr Asp Lys Asn Ser Asn 280 285 Gly Lys Asn Thr Ile Val Ser Asn Leu Tyr Leu Glu Gly Lys Ala Tyr 295 Gln Pro Val Ala Val Thr Ile Thr Phe Asn Lys Glu Ile Gly Cys Thr 310 Tyr Ser Ile Thr Phe Asp Phe Gly Trp Ala Lys Thr Tyr Asp Val Pro 330 Ile Pro Asp Ser Ser Ser Phe Thr

<210> 19

340

<211> 345

<212> PRT

<213> Human Adenovirus 23 Fiber Protein

<400> 19

Gln Asn Ile Pro Phe Leu Thr Pro Pro Phe Val Ser Ser Asp Gly Phe
1 5 10 15

Gln Asn Phe Pro Pro Gly Val Leu Ser Leu Lys Leu Ala Asp Pro Ile 20 25 30

Ala Ile Thr Asn Gly Asp Val Ser Leu Lys Val Gly Gly Leu Thr 35 40 45

Val Glu Gln Asp Ser Gly Asn Leu Lys Val Asn Thr Lys Ala Pro Leu 50 55 60

Gln Val Ala Ala Asp Lys Gln Leu Glu Ile Ala Leu Ala Asp Pro Phe 65 70 75 80

Glu Val Ser Lys Gly Arg Leu Gly Ile Lys Ala Gly His Gly Leu Lys 85 90 95

Val Ile Asp Asn Ser Ile Ser Gly Leu Glu Gly Leu Val Gly Thr Leu
100 105 110

Val Val Leu Thr Gly His Gly Ile Gly Thr Glu Asn Leu Leu Asn Asn 115 120 125

Asp Gly Ser Ser Arg Gly Val Gly Ile Asn Val Arg Leu Gly Lys Asp 130 135 140

Gly Gly Leu Ser Phe Asp Lys Lys Gly Asp Leu Val Ala Trp Asn Lys 145 150 155 160

Lys Tyr Asp Thr Arg Thr Leu Trp Thr Thr Pro Asp Pro Ser Pro Asn 165 170 175

Cys Lys Val Ile Glu Ala Lys Asp Ser Lys Leu Thr Leu Val Leu Thr 180 185 190

Lys Cys Gly Ser Gln Ile Leu Ala Asn Met Ser Leu Leu Ile Leu Lys 195 200 205

Gly Thr Tyr Glu Tyr Ile Ser Asn Ala Ile Ala Asn Lys Ser Phe Thr 210 215 220

Ile Lys Leu Leu Phe Asn Asp Lys Gly Val Leu Met Asp Gly Ser Ser 225 230 235 240

Leu Asp Lys Asp Tyr Trp Asn Tyr Lys Ser Asp Asp Ser Val Met Ser 245 250 255

Lys Ala Tyr Glu Asn Ala Val Pro Phe Met Pro Asn Leu Lys Ala Tyr 260 265 270

Pro Asn Pro Thr Thr Ser Thr Thr Asn Pro Ser Thr Asp Lys Ser 275 280 285

Asn Gly Lys Asn Ala Ile Val Ser Asn Val Tyr Leu Glu Gly Arg Ala 290 295 300

Tyr Gln Pro Val Ala Ile Thr Ile Thr Phe Asn Lys Glu Thr Gly Cys 305 310 315 320

Thr Tyr Ser Met Thr Phe Asp Phe Gly Trp Ser Lys Val Tyr Asn Pro

325 330 335

Ile Pro Phe Asp Thr Ser Ser Leu Thr 340 345

<210> 20

<211> 389

<212> PRT

<213> Human Adenovirus 24 Fiber Protein

<400> 20

Ser Cys Ser Cys Pro Ser Ala Pro Thr Ile Phe Met Leu Leu Gln Met 1 5 10 15

Lys Arg Ala Arg Pro Ser Glu Asp Thr Phe Asn Pro Val Tyr Pro Tyr
20 25 30

Gly Tyr Ala Arg Asn Gln Asn Ile Pro Phe Leu Thr Pro Pro Phe Val 35 40 45

Ser Ser Asp Gly Phe Gln Asn Phe Pro Gly Val Leu Ser Leu Lys Leu 50 55 60

Ala Asp Pro Ile Ala Ile Thr Asn Gly Asp Tyr Ser Leu Lys Val Gly 65 70 75 80

Gly Gly Leu Thr Val Glu Lys Asp Ser Gly Asn Leu Lys Val Asn Pro 85 90 95

Lys Ala Pro Leu Gln Val Thr Thr Asp Lys Gln Leu Glu Ile Ala Leu 100 105 110

Ala Tyr Pro Phe Glu Val Ser Asn Gly Lys Leu Gly Ile Lys Ala Gly
115 120 125

His Gly Leu Lys Val Ile Asp Lys Ile Ala Gly Leu Glu Gly Leu Ala 130 135 140

Gly Thr Leu Val Val Leu Thr Gly Lys Gly Ile Gly Thr Glu Asn Leu 145 150 155 160

Glu Asn Ser Asp Gly Ser Ser Arg Gly Val Gly Ile Asn Val Arg Leu 165 170 175

Ala Lys Asp Gly Gly Leu Ser Phe Asp Lys Lys Gly Asp Leu Val Ala 180 185 190

Trp Asn Lys His Asp Asp Arg Arg Thr Leu Trp Thr Thr Pro Asp Pro

Ser Pro Asn Cys Thr Ile Asp Gln Glu Arg Asp Ser Lys Leu Thr Leu 210 215 220

Val Leu Thr Lys Cys Gly Ser Gln Ile Leu Ala Asn Val Ser Leu Leu 225 230 235 240

Val Val Lys Gly Lys Phe Ser Asn Ile Asn Asn Asn Thr Asn Pro Thr 245 250 255

Asp Lys Lys Ile Thr Val Lys Leu Phe Asn Glu Lys Gly Val Leu 260 265 270

Met Asp Ser Ser Thr Leu Lys Lys Glu Tyr Trp Asn Tyr Arg Asn Asp 275 280 285

Asn Ser Thr Val Ser Gln Ala Tyr Asp Asn Ala Val Pro Phe Met Pro 295 Asn Ile Lys Ala Tyr Pro Lys Pro Thr Thr Asp Thr Ser Ala Lys Pro Glu Asp Lys Lys Ser Ala Ala Lys Arg Tyr Ile Val Ser Asn Val Tyr 330 Ile Gly Gly Leu Pro Asp Lys Thr Val Val Ile Thr Ile Lys Phe Asn Ala Glu Thr Glu Cys Ala Tyr Ser Ile Thr Phe Glu Phe Thr Trp Ala Lys Thr Phe Glu Asp Val Trp Phe Asp Ser Ser Phe Thr Phe Ser 375 Tyr Ile Ala Gln Glu 385 <210> 21 <211> 374 <212> PRT Human Adenovirus 25 Fiber Protein <213> <220> <221> Xaa

<222> (141)..(141) Can be any amino acid <223>

<400> 21

Ser Cys Ser Cys Pro Ser Ala Pro Thr Ile Phe Met Leu Leu Gln Met Lys Arg Ala Arg Pro Ser Glu Asp Thr Phe Asn Pro Val Tyr Pro Gly Tyr Ala Arg Asn Gln Asn Ile Pro Phe Leu Thr Ile Pro Pro Phe Val 40 Ser Ser Asp Gly Phe Gln Asn Phe Pro Pro Gly Val Leu Ser Leu Lys Leu Ala Asp Pro Ile Thr Ile Ser Asn Gly Asp Val Ser Leu Lys Val Gly Gly Leu Thr Val Glu Gln Asp Ser Gly Asn Leu Ser Val Asn Pro Lys Ala Pro Leu Gln Val Gly Thr Asp Lys Leu Glu Leu Ala 100 Leu Ala Pro Pro Phe Asn Val Lys Asp Asn Lys Leu Asp Leu Leu Val 120 125

Gly Asp Gly Leu Lys Val Ile Asp Lys Ser Ile Ser Xaa Leu Pro Gly

Leu Leu Asn Tyr Leu Val Val Leu Thr Gly Lys Gly Ile Gly Asn Glu

155

150

Glu Leu Lys Leu Asp Asp Gly Ser Asn Lys Val Gly Leu Cys Val Arg 165 170 175

Ile Gly Glu Gly Gly Leu Thr Phe Asp Asp Lys Gly Tyr Leu Val 180 185 190

Ala Trp Asn Lys Lys His Asp Ile Arg Thr Leu Trp Thr Thr Leu Asp 195 200 205

Pro Ser Pro Asn Cys Arg Ile Asp Val Asp Lys Asp Ser Lys Leu Thr 210 215 220

Leu Val Leu Thr Lys Cys Gly Ser Gln Ile Leu Ala Asn Val Ser Leu 225 230 235 240

Leu Val Val Lys Gly Arg Phe Gln Asn Leu Asn Tyr Lys Thr Asn Pro 245 250 255

Asn Leu Pro Lys Thr Phe Thr Ile Lys Leu Leu Phe Asp Glu Asn Gly 260 265 270

Ile Leu Lys Asp Ser Ser Asn Leu Asp Lys Asn Tyr Trp Asn Tyr Arg 275 280 285

Asn Gly Asn Ser Ile Leu Ala Glu Gln Tyr Lys Asn Ala Val Gly Phe 290 295 300

Met Pro Asn Leu Ala Ala Tyr Pro Lys Ser Thr Thr Gln Ser Lys 305 310 315 320

Leu Tyr Ala Arg Asn Thr Ile Phe Gly Asn Thr Tyr Leu Asp Ser Gln 325 330 335

Ala Tyr Asn Pro Val Val Ile Lys Ile Thr Phe Asn Gln Glu Ala Asp 340 345 350

Ser Ala Tyr Ser Ile Thr Leu Asn Tyr Ser Trp Gly Lys Asp Tyr Glu 355 360 365

Asn Ile Pro Phe Asp Ser 370

<210> 22

<211> 334

<212> PRT

<213> Human Adenovirus 27 Fiber Protein

<400> 22

Ile Pro Phe Leu Thr Pro Pro Phe Val Ser Ser Asp Gly Phe Lys Asn 1 5 10 15

Phe Pro Pro Gly Val Leu Ser Leu Lys Leu Ala Asp Pro Ile Thr Ile 20 25 30

Thr Asn Gly Asp Val Ser Leu Lys Val Gly Gly Gly Leu Val Val Glu 35 40 45

Lys Glu Ser Gly Lys Leu Ser Val Asp Pro Lys Thr Pro Leu Gln Val 50 55 60

Ala Ser Asp Asn Lys Leu Glu Leu Ser Tyr Asn Ala Pro Phe Lys Val 65 70 75 80

Glu Asn Asp Lys Leu Ser Leu Asp Val Gly His Gly Leu Lys Val Ile

90 99

Gly Asn Glu Val Ser Ser Leu Pro Gly Leu Ile Asn Lys Leu Val Val 105 Leu Thr Gly Lys Gly Ile Gly Thr Glu Leu Leu Lys Glu Gln Asn Ser Asp Lys Ile Ile Gly Val Gly Ile Asn Val Arg Ala Arg Gly Gly Leu Ser Phe Asp Asn Asp Gly Tyr Leu Val Ala Trp Asn Pro Lys Tyr Asp Thr Arg Thr Leu Trp Thr Thr Pro Asp Thr Ser Pro Asn Cys Lys Met Leu Thr Lys Lys Asp Ser Lys Leu Thr Leu Thr Leu Thr Lys Cys Gly Ser Gln Ile Leu Gly Asn Val Ser Leu Leu Ala Val Ser Gly Lys Tyr 200 Leu Asn Met Thr Lys Asp Glu Thr Gly Val Lys Ile Ile Leu Leu Phe Asp Arg Asn Gly Val Leu Met Gln Glu Ser Ser Leu Asp Lys Glu Tyr Trp Met Tyr Arg Asn Asp Asn Asn Val Ile Gly Thr Pro Tyr Glu Asn Ala Val Gly Phe Met Pro Asn Leu Val Ala Tyr Pro Lys Pro Thr Ser 260 Ala Asp Ala Lys Asn Tyr Ser Arg Ser Lys Ile Ile Ser Asn Tyr Leu 280 Lys Gly Leu Ile Tyr Gln Pro Val Ile Ile Ile Ala Ser Phe Asn Gln Glu Thr Thr Asn Gly Cys Val Tyr Ser Ile Ser Phe Asp Phe Thr Cys 315 Ser Lys Asp Tyr Thr Gly Gln Gln Phe Asp Val Thr Ser Phe <210> 23 <211> 374 <212> PRT Human Adenovirus 28 Fiber Protein <400> 23 Ser Cys Ser Cys Pro Ser Ala Pro Thr Ile Phe Met Leu Leu Gln Met Lys Arg Ala Arg Pro Ser Glu Asp Thr Phe Asn Pro Val Tyr Pro Tyr 25 Gly Tyr Ala Arg Asn Gln Asn Ile Pro Phe Leu Thr Pro Pro Phe Val 40

Ser Ser Asp Gly Phe Gln Asn Phe Pro Pro Gly Val Leu Ser Leu Lys

Leu Ala Asp Pro Ile Thr Ile Ala Asn Gly Asp Val Ser Leu Lys Leu Gly Gly Leu Thr Val Glu Lys Glu Ser Gly Asn Leu Thr Val Asn Pro Lys Ala Pro Leu Gln Val Ala Ser Gly Gln Leu Glu Leu Ala Tyr 105 Tyr Ser Pro Phe Asp Val Lys Asn Asn Met Leu Thr Leu Lys Ala Gly His Gly Leu Ala Val Val Thr Lys Asp Asn Thr Asp Leu Gln Pro Leu Met Gly Thr Leu Val Val Leu Thr Gly Lys Gly Ile Gly Thr Gly Thr 155 150 Ser Ala His Gly Gly Thr Ile Asp Val Arg Ile Gly Lys Asn Gly Ser Leu Ala Phe Asp Lys Asn Gly Asp Leu Val Ala Trp Asp Lys Glu Asn Asp Arg Arg Thr Leu Trp Thr Thr Pro Asp Thr Ser Pro Asn Cys Lys 200 Met Ser Glu Val Lys Asp Ser Lys Leu Thr Leu Ile Leu Thr Lys Cys Gly Ser Gln Ile Leu Gly Ser Val Ser Leu Leu Ala Val Lys Gly Glu 230 235 Tyr Gln Asn Met Thr Ala Ser Thr Asn Lys Asn Val Lys Ile Thr Leu Leu Phe Asp Ala Asn Gly Val Leu Leu Glu Gly Ser Ser Leu Asp Lys 265 Glu Tyr Trp Asn Phe Arg Asn Asn Asp Ser Thr Val Ser Gly Lys Tyr 280 Glu Asn Ala Val Pro Phe Met Pro Asn Ile Thr Ala Tyr Lys Pro Val 295 Asn Ser Lys Ser Tyr Ala Arg Ser His Ile Phe Gly Asn Val Tyr Ile Asp Ala Lys Pro Tyr Asn Pro Val Val Ile Lys Ile Ser Phe Asn Gln 325 Glu Thr Gln Asn Asn Cys Val Tyr Ser Ile Ser Phe Asp Tyr Thr Cys 345 Ser Lys Glu Tyr Thr Gly Met Gln Phe Asp Val Thr Ser Phe Thr Phe

Ser Tyr Ile Ala Gln Glu 370

<210> 24

<211> 343

<212> PRT

<213> Human Adenovirus 29 Fiber Protein

Gln Asn Ile Pro Phe Leu Thr Pro Pro Phe Val Ser Ser Asp Gly Phe Lys Asn Phe Pro Pro Gly Val Leu Ser Leu Lys Leu Ala Asp Pro Ile Ala Ile Thr Asn Gly Asp Val Ser Leu Lys Val Gly Gly Leu Thr Val Glu Gln Asp Ser Gly Asn Leu Ser Val Asn Pro Lys Ala Pro Leu Gln Val Gly Thr Asp Lys Lys Leu Glu Leu Ala Leu Ala Pro Pro Phe Asp Val Arg Asp Asn Lys Leu Ala Ile Leu Val Gly Asp Gly Leu Lys Val Ile Asp Arg Ser Ile Ser Asp Leu Pro Gly Leu Leu Asn Tyr Leu Val Val Leu Thr Gly Lys Gly Ile Gly Asn Glu Glu Leu Lys Asn Asp Asp Gly Ser Asn Lys Gly Val Gly Leu Cys Val Arg Ile Gly Glu Gly Gly Gly Leu Thr Phe Asp Asp Lys Gly Tyr Leu Val Ala Trp Asn Asn Lys His Asp Ile Arg Thr Leu Trp Thr Thr Leu Asp Pro Ser Pro Asn Cys Lys Ile Asp Ile Glu Lys Asp Ser Lys Leu Thr Leu Val Leu Thr Lys Cys Gly Ser Gln Ile Leu Ala Asn Val Ser Leu Ile Ile Val Asn 200 Gly Lys Phe Lys Ile Leu Asn Asn Lys Thr Asp Pro Ser Leu Pro Lys Ser Phe Asn Ile Lys Leu Leu Phe Asp Gln Asn Gly Val Leu Leu Glu Asn Ser Asn Ile Glu Lys Gln Tyr Leu Asn Phe Arg Ser Gly Asp Ser 250 Ile Leu Pro Glu Pro Tyr Lys Asn Ala Ile Gly Phe Met Pro Asn Leu Leu Ala Tyr Ala Lys Ala Thr Thr Asp Gln Ser Lys Ile Tyr Ala Arg 280 Asn Thr Thr Tyr Gly Asn Ile Tyr Leu Asp Asn Gln Pro Tyr Asn Pro 290 295 Val Val Ile Lys Ile Thr Phe Asn Asn Glu Ala Asp Ser Ala Tyr Ser Ile Thr Phe Asn Tyr Ser Trp Thr Lys Asp Tyr Asp Asn Ile Pro Phe

330

Asp Ser Thr Ser Phe Thr Ser 340

<210> 25

<211> 385

<212> PRT

<213> Human Adenovirus 30 Fiber Protein

<220>

<221> Xaa

<222> (23)..(97)

<223> Can be any amino acid

<400> 25

Ser Cys Ser Cys Pro Ser Ala Pro Thr Ile Phe Met Leu Gln Met
1 5 10 15

Lys Arg Ala Arg Pro Ser Xaa Asp Thr Phe Asn Pro Val Tyr Pro Tyr
20 25 30

Gly Tyr Ala Arg Asn Gln Asn Ile Pro Phe Xaa Thr Pro Pro Phe Val 35 40 45

Xaa Ser Asp Gly Phe Lys Asn Phe Pro Pro Gly Val Leu Ser Leu Lys 50 55 60

Leu Ala Asp Pro Ile Ala Ile Thr Asn Gly Asp Tyr Ser Leu Lys Val 65 70 75 80

Gly Gly Leu Thr Val Glu Gln Asp Ser Gly Asn Leu Ser Val Asn 85 90 95

Xaa Lys Ala Pro Leu Gln Val Gly Thr Asp Lys Lys Leu Glu Leu Ala 100 105 110

Leu Ala Pro Pro Phe Asp Val Arg Asp Asn Lys Leu Ala Ile Leu Val 115 120 125

Gly Asp Gly Leu Lys Val Ile Asp Arg Ser Ile Ser Asp Leu Pro Gly 130 140

Leu Leu Asn Tyr Leu Val Val Xaa Thr Gly Lys Gly Ile Gly Asn Glu 145 150 155 160

Glu Leu Lys Asn Asp Asp Gly Ser Asn Lys Gly Val Gly Leu Cys Val 165 170 175

Arg Ile Gly Glu Gly Gly Leu Thr Xaa Asp Asp Lys Gly Tyr Leu 180 185 190

Val Ala Trp Asn Asn Lys His Asp Ile Arg Thr Leu Trp Thr Thr Leu 195 200 205

Asp Pro Ser Pro Asn Cys Lys Ile Asp Glu Lys Asp Ser Lys Leu Thr 210 215 220

Leu Val Leu Thr Lys Cys Gly Ser Gln Ile Leu Ala Asn Val Ser Leu 225 230 235 240

Ile Ile Val Asn Gly Lys Phe Lys Ile Leu Asn Asn Lys Thr Asp Pro 245 250 255

Ser Leu Pro Lys Ser Phe Asn Ile Lys Leu Leu Phe Asp Gln Asn Gly Val Leu Leu Glu Asn Ser Asn Ile Glu Lys Gln Tyr Leu Asn Phe Arg 280 Ser Gly Asp Ser Ile Leu Pro Glu Pro Tyr Lys Asn Ala Ile Gly Phe 295 Met Pro Asn Leu Leu Ala Tyr Ala Lys Ala Thr Thr Asp Gln Ser Lys Thr Tyr Ala Arg Asn Thr Ile Tyr Gly Asn Ile Tyr Leu Asp Asn Gln Pro Tyr Asn Pro Val Val Ile Lys Ile Thr Phe Asn Asn Glu Ala Asp Ser Ala Tyr Ser Ile Thr Phe Asn Tyr Ser Trp Thr Lys Asp Tyr Asp Asn Ile Pro Phe Asp Ser Thr Ser Phe Thr Phe Ser Tyr Ile Ala Gln Glu 385 <210> 26 389 <211> <212> PRT <213> Human Adenovirus 32 Fiber Protein Ser Cys Ser Pro Ser Ala Pro Thr Ile Phe Met Leu Gln Met Lys Arg Ala Arg Pro Ser Glu Asp Thr Phe Asn Pro Val Tyr Pro Tyr Gly 25 Tyr Ala Arg Asn Gln Asn Ile Pro Phe Leu Thr Pro Pro Phe Val Ser 40 Ser Asp Gly Phe Gln Asn Phe Pro Pro Gly Val Leu Ser Leu Lys Leu Ala Asp Pro Ile Thr Ile Ala Asn Gly Asn Val Ser Leu Lys Val Gly Gly Gly Leu Thr Leu Glu Gln Asp Ser Gly Lys Leu Ile Val Asn Pro Lys Ala Pro Leu Gln Val Ala Asn Asp Lys Leu Glu Leu Ser Tyr Ala 105 Asp Pro Phe Glu Thr Ser Ala Asn Lys Leu Ser Leu Lys Val Gly His 115 Gly Leu Lys Val Leu Asp Glu Lys Asn Ala Gly Gly Leu Lys Asp Leu 135 Ile Gly Thr Leu Val Val Leu Thr Asp Lys Gly Ile Gly Val Glu Glu

Leu Lys Asn Ala Asp Asn Thr Asn Arg Gly Val Gly Ile Asn Val Arg

Leu Gly Lys Asp Gly Gly Leu Ser Phe Asp Lys Lys Gly Asp Leu Val 185 180 Ala Trp Asn Lys His Asp Asp Arg Arg Thr Leu Trp Thr Thr Pro Asp 200 Pro Ser Pro Asn Cys Thr Thr Asp Glu Glu Arg Asp Ser Lys Leu Thr Leu Val Leu Thr Lys Cys Gly Ser Gln Ile Leu Ala Asn Val Ser Leu Leu Val Val Lys Gly Lys Phe Ser Asn Ile Asn Asn Asn Thr Asn Pro 250 Thr Asp Lys Lys Ile Thr Val Lys Leu Leu Phe Asn Glu Lys Gly Val Leu Met Asp Ser Ser Ser Leu Lys Lys Glu Tyr Trp Asn Tyr Arg Asn 280 Asp Asn Ser Thr Ser Gln Ala Tyr Asp Asn Ala Val Pro Phe Met Pro 295 Asn Ile Lys Ala Tyr Pro Lys Pro Thr Thr Asp Thr Ser Ala Lys Pro Glu Asp Lys Lys Ser Ala Ala Lys Arg Tyr Ile Val Ser Asn Val Tyr Ile Gly Gly Leu Pro Asp Lys Thr Val Val Ile Thr Ile Lys Leu Asn Ala Glu Thr Glu Ser Ala Tyr Ser Met Thr Phe Glu Phe Thr Trp Ala 360 Lys Thr Phe Glu Asn Leu Gln Phe Asp Ser Ser Ser Phe Thr Phe Ser Tyr Ile Ala Gln Glu 385 <210> 27 391 <211> <212> PRT Human Adenovirus 33 Fiber Protein <213> Ser Cys Ser Cys Pro Ser Ala Pro Thr Ile Phe Met Leu Leu Gln Met Lys Arg Ala Arg Pro Ser Glu Asp Thr Phe Asn Pro Val Tyr Pro Tyr 25 Gly Tyr Ala Arg Asn Gln Asn Ile Pro Phe Leu Thr Pro Pro Phe Val 40 Ser Ser Asp Gly Phe Lys Asn Phe Pro Pro Gly Val Leu Ser Leu Lys

Leu Ala Asp Pro Ile Thr Ile Thr Asn Gly Asp Val Ser Leu Lys Val

Gly Gly Leu Thr Leu Gln Glu Gly Ser Leu Thr Val Asn Pro Lys Ala Pro Leu Gln Leu Ala Asn Asp Lys Leu Glu Leu Val Tyr Asp Asp Pro Phe Glu Val Ser Thr Asn Lys Leu Ser Leu Lys Val Gly His 120 Gly Leu Lys Val Leu Asp Asp Lys Ser Ala Gly Gly Leu Gln Asp Leu Ile Gly Lys Leu Val Val Leu Thr Gly Lys Gly Ile Gly Ile Glu Asn Leu Gln Asn Asp Asp Gly Ser Ser Arg Gly Val Gly Ile Asn Val Arg Leu Gly Thr Asp Gly Gly Leu Ser Phe Asp Arg Lys Gly Glu Leu Val Ala Trp Asn Arg Lys Asp Asp Arg Arg Thr Leu Trp Thr Thr Pro Asp 200 Pro Ser Pro Asn Cys Lys Ala Glu Thr Glu Lys Asp Ser Lys Leu Thr Leu Val Leu Thr Lys Cys Gly Ser Gln Ile Leu Ala Thr Val Ser Ile Ile Val Leu Lys Gly Lys Tyr Glu Phe Val Lys Lys Glu Thr Glu Pro 250 Lys Ser Phe Asp Val Lys Leu Leu Phe Asp Ser Lys Gly Val Leu Leu Pro Thr Ser Asn Leu Ser Lys Glu Tyr Trp Asn Tyr Arg Ser Tyr Asp Asn Asn Ile Gly Thr Pro Tyr Glu Asn Ala Val Pro Phe Met Pro Asn 290 Leu Lys Ala Tyr Pro Lys Pro Thr Lys Thr Ala Ser Asp Lys Ala Glu 315 Asn Lys Ile Ser Ser Ala Lys Asn Lys Ile Val Ser Asn Phe Tyr Phe Gly Gln Ala Tyr Gln Pro Gly Thr Ile Ile Lys Phe Asn Glu Glu Ile Asp Glu Thr Cys Ala Tyr Ser Ile Thr Phe Asn Phe Gly Trp 360 Gly Lys Val Tyr Asp Asn Pro Phe Pro Phe Asp Thr Thr Ser Phe Thr

Phe Ser Tyr Ile Ala Gln Glu 385 390

<210> 28

370

<211> 338

<212> PRT

<213> Human Adenovirus 34 Fiber Protein

<400> 28

Ser Cys Ser Cys Pro Ser Ala Pro Thr Ile Phe Met Leu Leu Gln Met Lys Arg Ala Arg Pro Ser Glu Asp Thr Phe Asn Pro Val Tyr Pro Tyr 25 Glu Asp Glu Ser Thr Ser Gln His Pro Phe Ile Asn Pro Gly Phe Ile Ser Pro Asn Gly Phe Thr Gln Ser Pro Asp Gly Val Leu Thr Leu Lys Cys Leu Thr Pro Leu Thr Thr Gly Gly Ser Leu Gln Leu Lys Val Gly Gly Leu Thr Val Asp Asp Thr Asp Gly Thr Leu Gln Lys Asn Ile Arg Ala Thr Thr Pro Ile Thr Lys Asn Asn His Ser Val Glu Leu Thr Ile Gly Asn Gly Leu Glu Thr Gln His Asn Lys Leu Cys Ala Lys 120 Leu Gly Asn Gly Asn Leu Lys Phe Asn Asn Gly Asp Ile Cys Ile Lys Asp Ser Ile Asn Thr Leu Trp Thr Gly Ile Asn Pro Pro Asn Cys Gln Ile Val Glu Asn Thr Asn Thr Asn Asp Gly Lys Leu Thr Leu Val Leu Val Lys Asn Gly Gly Leu Val Asn Gly Tyr Val Ser Leu Val Gly Val Ser Asp Thr Val Asn Gln Met Phe Thr Gln Lys Thr Ala Asn Ile Gln 200 Leu Arg Leu Tyr Phe Asp Ser Ser Gly Asn Leu Leu Thr Asp Glu Ser Asp Leu Lys Ile Pro Leu Lys Asn Lys Ser Ser Thr Ala Thr Ser Glu 235 Thr Val Ala Ser Ser Lys Ala Phe Met Pro Ser Thr Thr Ala Tyr Pro 250 Phe Asn Thr Thr Arg Asp Ser Glu Asn Tyr Ile His Gly Ile Cys Tyr Tyr Met Thr Ser Tyr Asp Arg Ser Leu Phe Pro Leu Asn Ile Ser 280 Ile Met Leu Asn Ser Arg Met Ile Ser Ser Asn Val Ala Tyr Ala Ile 290 295 Gln Phe Glu Trp Asn Leu Asn Ala Ser Glu Ser Pro Glu Lys Gln His 310 315 Met Thr Leu Thr Thr Ser Pro Phe Phe Ser Tyr Ile Ile Glu Asp 325 330

## Asp Asn

<210> 29 <211> 338 PRT <212> Human Adenovirus 35 Fiber Protein <213> <400> 29 Ser Cys Ser Cys Pro Ser Ala Pro Thr Ile Phe Met Leu Leu Gln Met Lys Arg Ala Arg Pro Ser Glu Asp Thr Phe Asn Pro Val Tyr Pro Tyr Glu Asp Glu Ser Thr Ser Gln His Pro Phe Ile Asn Pro Gly Phe Ile Ser Pro Asn Gly Phe Thr Gln Ser Pro Asp Gly Val Leu Thr Leu Lys Cys Leu Thr Pro Leu Thr Thr Gly Gly Ser Leu Gln Leu Lys Val 65 70 75 80 Gly Gly Leu Thr Val Asp Asp Thr Asp Gly Thr Leu Gln Glu Asn Ile Arg Ala Thr Ala Pro Ile Thr Lys Asn Asn His Ser Val Glu Leu Ser Ile Gly Asn Gly Leu Glu Thr Gln Asn Asn Lys Leu Cys Ala Lys 120 Leu Gly Asn Gly Leu Lys Phe Asn Asn Gly Asp Ile Cys Ile Lys Asp Ser Ile Asn Thr Leu Trp Thr Gly Ile Asn Pro Pro Pro Asn Cys Gln Ile Val Glu Asn Thr Asn Thr Asn Asp Gly Lys Leu Thr Leu Val Leu 170 165 Val Lys Asn Gly Gly Leu Val Asn Gly Tyr Val Ser Leu Val Gly Val Ser Asp Thr Val Asn Gln Met Phe Thr Gln Lys Thr Ala Asn Ile Gln 195 200 205 Leu Arg Leu Tyr Phe Asp Ser Ser Gly Asn Leu Leu Thr Glu Glu Ser Asp Leu Lys Ile Pro Leu Lys Asn Lys Ser Ser Thr Ala Thr Ser Glu Thr Val Ala Ser Ser Lys Ala Phe Met Pro Ser Thr Thr Ala Tyr Pro Phe Asn Thr Thr Thr Arg Asp Ser Glu Asn Tyr Ile His Gly Ile Cys Tyr Tyr Met Thr Ser Tyr Asp Arg Ser Leu Phe Pro Leu Asn Ile Ser

280

Ile Met Leu Asn Ser Arg Met Ile Ser Ser Asn Val Ala Tyr Ala Ile 290 295 300

Gln Phe Glu Trp Asn Leu Asn Ala Ser Glu Ser Pro Glu Ser Asn Ile 305 310 315 320

Met Thr Leu Thr Thr Ser Pro Phe Phe Phe Ser Tyr Ile Thr Glu Asp 325 330 335

## Asp Asn

<210> 30

<211> 391

<212> PRT

<213> Human Adenovirus 36 Fiber Protein

<400> 30

Ser Cys Ser Cys Pro Ser Ala Pro Thr Ile Phe Met Leu Leu Gln Met 1 5 10 15

Lys Arg Ala Arg Pro Ser Glu Asp Thr Phe Asn Pro Val Tyr Pro Tyr 20 25 30

Gly Tyr Ala Arg Asn Gln Asn Ile Pro Phe Leu Thr Pro Pro Phe Val

Ser Ser Asp Gly Phe Lys Asn Phe Pro Pro Gly Val Leu Ser Leu Lys 50 60

Leu Ala Asp Pro Ile Ala Ile Val Asn Gly Asp Val Ser Leu Lys Val 65 70 75 80

Gly Gly Leu Thr Val Glu Gln Asp Ser Gly Lys Leu Lys Val Asn 85 90 95

Pro Lys Ile Pro Leu Gln Val Val Asn Lys Gln Leu Glu Leu Ala Thr

Asp Lys Pro Phe Lys Ile Glu Asn Asn Lys Leu Ala Leu Asp Val Gly
115 120 125

His Gly Leu Lys Val Ile Asp Lys Thr Ile Ser Asp Leu Gln Gly Leu 130 135 140

Val Gly Lys Leu Val Val Leu Thr Gly Val Gly Ile Gly Thr Glu Thr 145 150 155 160

Leu Lys Asp Lys Asn Asp Lys Val Ile Gly Ser Ala Val Asn Val Arg 165 170 175

Leu Gly Lys Asp Gly Gly Leu Asp Phe Asn Lys Lys Gly Asp Leu Val 180 185 190

Ala Trp Asn Arg Tyr Asp Asp Arg Thr Leu Trp Thr Thr Pro Asp 195 200 205

Pro Ser Pro Asn Cys Lys Val Tyr Glu Ala Lys Ser Lys Leu Thr Leu 210 215 220

Val Leu Thr Lys Cys Gly Ser Gln Ile Leu Ala Ser Val Ala Leu Leu 225 230 235 240

Ile Val Lys Gly Lys Tyr Gln Thr Ile Ser Glu Ser Thr Ile Pro Lys

Asp Gln Arg Asn Phe Ser Val Lys Leu Met Phe Asp Glu Lys Gly Lys 260 Leu Leu Asp Lys Ser Ser Leu Asp Lys Glu Tyr Trp Asn Phe Arg Ser 280 Asn Asp Ser Val Val Gly Thr Ala Tyr Asp Asn Ala Val Pro Phe Met Pro Asn Leu Lys Ala Tyr Pro Lys Asn Thr Thr Ser Ser Thr Asn Pro Asp Asp Lys Ile Ser Ala Gly Lys Lys Asn Ile Val Ser Asn Val Tyr Leu Glu Gly Arg Val Tyr Gln Pro Val Ala Leu Thr Val Lys Phe Asn Ser Glu Asn Asp Cys Ala Tyr Ser Ile Thr Phe Asp Phe Val Trp 360 Ser Lys Thr Tyr Glu Ser Pro Val Ala Phe Asp Ser Ser Ser Phe Thr Phe Ser Tyr Ile Ala Gln Glu <210> 31 <211> 381 <212> PRT Human Adenovirus 37 Fiber Protein <213> <400> Ser Cys Ser Cys Pro Ser Ala Pro Thr Ile Phe Met Leu Leu Gln Met Lys Arg Ala Arg Pro Ser Glu Asp Thr Phe Asn Pro Val Tyr Pro Tyr 25 Gly Tyr Ala Arg Asn Gln Asn Ile Pro Phe Leu Thr Pro Pro Phe Val Ser Ser Asp Gly Phe Lys Asn Phe Pro Pro Gly Val Leu Ser Leu Lys Leu Ala Asp Pro Ile Thr Ile Thr Asn Gly Asp Val Ser Leu Lys Val Gly Gly Leu Thr Leu Gln Asp Gly Ser Leu Thr Val Asn Pro Lys Ala Pro Leu Gln Val Asn Thr Asp Lys Leu Glu Leu Ala Tyr Asp Asn Pro Phe Glu Ser Ser Ala Asn Lys Leu Ser Leu Val Gly His Gly 120 Leu Lys Val Leu Asp Glu Lys Ser Ala Ala Gly Leu Lys Asp Leu Ile

Gly Lys Leu Val Val Leu Thr Gly Lys Gly Ile Gly Thr Glu Asn Leu

150

Glu Asn Thr Asp Gly Ser Ser Arg Gly Ile Gly Ile Asn Val Arg Ala Arg Glu Gly Leu Thr Phe Asp Asn Asp Gly Tyr Leu Val Ala Trp Asn Pro Lys Tyr Asp Leu Arg Thr Leu Trp Thr Thr Pro Asp Thr Ser Pro 200 Asn Cys Thr Ile Ala Gln Asp Lys Asp Ser Lys Leu Thr Leu Val Leu Thr Lys Cys Gly Ser Gln Ile Leu Ala Asn Val Ser Leu Ile Val Val Ala Gly Lys Tyr His Ile Ile Asn Asn Lys Thr Asn Pro Lys Ile Lys Ser Phe Thr Ile Lys Leu Leu Phe Asn Lys Phe Asn Gly Val Leu Leu Asp Asn Ser Asn Leu Gly Lys Ala Tyr Trp Asn Phe Arg Ser Gly Asn Ser Asn Val Ser Thr Ala Tyr Glu Lys Ala Ile Gly Phe Met Pro Asn Leu Val Ala Val Ser Lys Pro Ser Asn Ser Lys Lys Tyr Ala Arg Asp Ile Val Tyr Gly Asn Ile Thr Tyr Leu Gly Gly Lys Pro Asp Gln Pro Gly Val Ile Lys Thr Thr Phe Asn Gln Glu Thr Gly Cys Glu Tyr Ser

Ile Thr Phe Asn Phe Ser Trp Ser Lys Thr Tyr Glu Asn Val Glu Phe

360

Glu Thr Thr Ser Phe Thr Phe Ser Tyr Ile Ala Gln Glu 375 370

<210> 32

<211> 391

<212> PRT

<213> Human Adenovirus 38 Fiber Protein

<220>

<221> Xaa

(49)..(192) <222>

<223> Can be any amino acid

<400> 32

Ser Cys Ser Cys Pro Ser Ala Pro Thr Ile Phe Met Leu Leu Gln Met 10

Lys Arg Ala Arg Pro Ser Glu Asp Thr Phe Asn Pro Val Tyr Pro Tyr

Gly Tyr Ala Arg Asn Gln Asn Ile Pro Phe Xaa Thr Pro Pro Phe Val

Xaa Ser Asp Gly Phe Gln Asn Phe Pro Pro Gly Val Leu Ser Leu Lys Leu Ala Asp Pro Ile Thr Ile Ala Asn Gly Asn Val Ser Leu Lys Val Gly Gly Leu Thr Leu Glu Gln Asp Ser Gly Lys Leu Ile Val Asn Xaa Lys Ala Pro Leu Gln Val Ala Asn Asp Lys Leu Glu Leu Ser Tyr Ala Asp Pro Phe Glu Thr Ser Ala Asn Lys Leu Ser Leu Lys Val Gly His Gly Leu Lys Val Leu Asp Glu Lys Asn Ala Gly Gly Leu Lys Asp 135 Leu Ile Gly Thr Leu Val Val Leu Thr Gly Lys Gly Ile Gly Val Glu Glu Leu Lys Asn Ala Asp Asn Thr Asn Arg Gly Val Gly Ile Asn Val Arg Leu Gly Lys Asp Gly Gly Leu Ser Phe Asp Lys Lys Gly Asp Xaa 185 Val Ala Trp Asn Lys His Asp Asp Arg Arg Thr Leu Trp Thr Thr Pro Asp Pro Ser Pro Asn Cys Thr Ile Asp Glu Glu Arg Asp Ser Lys Leu Thr Leu Val Leu Thr Lys Cys Gly Ser Gln Ile Leu Ala Asn Val Ser Leu Leu Val Val Lys Gly Lys Phe Ser Asn Ile Asn Asn Asn Thr Asn Pro Thr Asp Lys Lys Ile Thr Val Lys Leu Leu Phe Asn Glu Lys Gly 265 Val Leu Met Asp Ser Ser Ser Leu Lys Lys Glu Tyr Trp Asn Tyr Arg Asn Asp Asn Ser Thr Val Ser Gln Ala Tyr Asp Asn Ala Val Pro Phe Met Pro Asn Ile Lys Ala Tyr Pro Lys Pro Thr Thr Asp Thr Ser Ala 310 Lys Pro Glu Asp Lys Lys Ser Ala Ala Lys Arg Tyr Thr Val Ser Asn Val Tyr Ile Gly Gly Leu Pro Asp Lys Thr Val Val Ile Thr Ile Lys 345 Leu Asn Ala Glu Thr Glu Ser Ala Tyr Ser Met Thr Phe Glu Phe Thr 355 Trp Ala Lys Thr Phe Glu Asn Leu Gln Phe Asp Ser Ser Phe Thr Phe Ser Tyr Ile Ala Gln Glu

<210> 33

<211> 338

<212> PRT

<213> Human Adenovirus 39 Fiber Protein

<400> 33

Ile Arg Ile Ser Pro Ser Ser Leu Pro Pro Leu Ser Pro Pro Met Asp
1 10 15

Ser Lys Thr Ser Pro Leu Gly Cys Tyr His Ser Asn Trp Leu Thr Gln
20 25 30

Ser Pro Ser Pro Met Gly Met Ser His Arg Trp Glu Gly Gly Ser Pro 35 40 45

Trp Gln Glu Gly Thr Gly Asp Leu Lys Val Asn Ala Lys Ser Pro Leu 50 55 60

Gln Val Ala Thr Asn Lys Gln Leu Glu Ile Ala Leu Ala Lys Pro Phe 65 70 75 80

Glu Glu Lys Asp Gly Lys Leu Ala Leu Lys Ile Gly His Gly Leu Ala 85 90 95

Val Val Asp Glu Asn His Thr His Leu Gln Ser Leu Ile Gly Thr Leu 100 105 110

Val Ile Leu Thr Gly Lys Gly Ile Gly Thr Gly Arg Ala Glu Ser Gly
115 120 125

Gly Thr Ile Asp Val Arg Leu Gly Ser Gly Gly Leu Ser Phe Asp 130 135 140

Lys Asp Gly Asn Leu Val Ala Trp Asn Lys Asp Asp Asp Arg Arg Thr 145 150 155 160

Leu Trp Thr Thr Pro Asp Pro Ser Pro Asn Cys Lys Ile Asp Gln Asp 165 170 175

Lys Asp Ser Lys Leu Thr Phe Val Leu Thr Lys Cys Gly Ser Gln Ile 180 185 190

Leu Ala Asn Met Ser Leu Leu Val Val Lys Gly Lys Phe Ser Met Ile 195 200 205

Asn Asn Lys Val Asn Gly Thr Asp Asp Tyr Lys Lys Phe Thr Ile Lys 210 220

Leu Leu Phe Asp Glu Lys Gly Val Leu Leu Lys Asp Ser Ser Leu Asp 225 230 235 240

Lys Glu Tyr Trp Asn Tyr Arg Ser Asn Asn Asn Val Gly Ser Ala 245 250 255

Tyr Glu Glu Ala Val Gly Phe Met Pro Ser Thr Thr Ala Tyr Pro Lys 260 265 270

Pro Pro Thr Pro Pro Thr Asn Pro Thr Thr Pro Leu Glu Lys Ser Gln 275 280 285

Ala Lys Asn Lys Tyr Val Ser Asn Val Tyr Leu Gly Gly Gln Ala Gly 290 295 300

Asn Pro Val Ala Thr Thr Val Ser Phe Asn Lys Glu Thr Gly Cys Thr 305 310 315 320

Tyr Ser Ile Thr Phe Asp Phe Ala Trp Asn Lys Thr Tyr Glu Asn Val 325 330 335

Gln Cys

<210> 34

<211> 378

<212> PRT

<213> Human Adenovirus 42 Fiber Protein

<220>

<221> Xaa

<222> (237)..(237)

<223> Can be any amino acid

<400> 34

Ser Cys Ser Cys Pro Ser Ala Pro Thr Ile Phe Met Leu Leu Gln Met 1 5 10 15

Lys Arg Ala Arg Pro Ser Glu Asp Thr Phe Asn Pro Val Tyr Pro Tyr 20 25 30

Gly Tyr Ala Arg Asn Gln Asn Ile Pro Phe Leu Thr Pro Pro Phe Val 35 40 45

Ser Ser Asp Gly Phe Lys Asn Phe Pro Pro Gly Val Leu Ser Leu Lys 50 55 60

Leu Ala Asn Pro Ile Ala Ile Thr Asn Gly Asp Val Ser Leu Lys Val 65 70 75 80

Gly Gly Gly Leu Thr Leu Gln Asp Gly Thr Gly Lys Leu Thr Ile Asp 85 90 95

Thr Lys Thr Pro Leu Gln Val Ala Asn Asn Lys Leu Glu Leu Ala Phe 100 105 110

Asp Ala Pro Leu Tyr Glu Lys Asn Gly Lys Leu Ala Leu Lys Thr Gly 115 120 125

His Gly Leu Ala Val Leu Thr Lys Asp Ile Gly Ile Pro Glu Leu Ile 130 135 140

Gly Ser Leu Val Ile Leu Thr Gly Lys Gly Ile Gly Thr Gly Thr Val 145 150 155 160

Ala Gly Gly Gly Thr Ile Asp Val Arg Leu Gly Asp Asp Gly Gly Leu 165 170 175

Ser Phe Asp Lys Lys Gly Asp Leu Val Ala Trp Asn Lys Lys Asn Asp 180 185 190

Arg Arg Thr Leu Trp Thr Thr Pro Asp Pro Ser Pro Asn Cys Arg Val

Ser Glu Asp Lys Asp Ser Lys Leu Thr Leu Ile Leu Thr Lys Cys Gly 210 220

Ser Gln Ile Leu Ala Ser Phe Ser Leu Leu Val Val Xaa Gly Thr Tyr

225 230 235 240

Thr Thr Val Asp Lys Asn Thr Thr Asn Lys Gln Phe Ser Ile Lys Leu 245 250 255

Leu Phe Asp Ala Asn Gly Lys Leu Lys Ser Glu Ser Asn Leu Ser Gln 260 265 270

Tyr Trp Asn Tyr Arg Ser Asp Asn Ser Val Val Ser Thr Pro Tyr Asp 275 280 285

Asn Ala Val Pro Phe Met Pro Asn Thr Ala Tyr Pro Lys Ile Ile Asn 290 295 300

Ser Thr Thr Asp Pro Glu Asn Lys Lys Ser Ala Lys Lys Thr Ile Val 305 310 315 320

Gly Asn Val Tyr Leu Glu Gly Asn Ala Gly Gln Pro Val Ala Val Ala 325 330 335

Ile Ser Phe Asn Lys Glu Thr Thr Ala Asp Tyr Ser Ile Thr Phe Asp 340 345 350

Phe Ala Trp Ser Lys Ala Tyr Glu Thr Pro Val Pro Phe Asp Thr Ser 355 360 365

Ser Met Thr Phe Ser Tyr Ile Ala Gln Glu 370 375

<210> 35

<211> 328

<212> PRT

<213> Human Adenovirus 43 Fiber Protein

<220>

<221> Xaa

<222> (4)..(233)

<223> Can be any amino acid

<400> 35

Asn Ile Pro Xaa Leu Thr Pro Pro Phe Val Ser Ser Asp Gly Phe Lys
1 10 15

Asn Phe Pro Pro Gly Val Leu Ser Leu Lys Leu Ala Asp Pro Ile Thr 20 25 30

Ile Thr Asn Gly Asp Val Ser Leu Lys Val Gly Gly Gly Leu Thr Val 35 40 45

Glu Lys Glu Ser Gly Asn Leu Thr Val Asn Pro Lys Ala Pro Leu Gln
50 60

Val Ala Lys Gly Gln Leu Glu Leu Ala Tyr Asp Ser Pro Phe Asp Val 65 70 75 80

Lys Asn Asn Met Leu Thr Leu Lys Ala Gly His Gly Leu Ala Val Val 85 90 95

Thr Lys Asp Asn Thr Asp Leu Gln Pro Leu Met Gly Thr Leu Val Val 100 105 110

Leu Thr Gly Lys Gly Ile Gly Thr Gly Thr Ser Ala His Gly Gly Thr
115 120 125

Ile Asp Val Arg Ile Gly Lys Asn Gly Ser Leu Ala Phe Asp Lys Asp Gly Asp Leu Val Ala Trp Asp Lys Glu Asn Asp Arg Arg Thr Leu Trp Thr Thr Pro Asp Thr Ser Pro Asn Cys Lys Met Ser Glu Ala Lys Asp 165 Ser Lys Leu Thr Leu Ile Leu Thr Lys Cys Gly Ser Gln Ile Leu Gly Ser Val Ser Leu Leu Ala Val Lys Gly Glu Tyr Gln Asn Met Thr Ala Asn Thr Lys Lys Asn Val Lys Ile Thr Leu Leu Phe Asp Ala Asn Gly Val Leu Leu Ala Gly Ser Ser Xaa Xaa Lys Glu Tyr Trp Asn Phe Arg Ser Asn Asp Ser Thr Val Ser Gly Asn Tyr Glu Asn Ala Val Gln Phe Met Pro Asn Ile Thr Ala Tyr Lys Pro Thr Asn Ser Lys Ser Tyr Ala Arg Ser Val Ile Phe Gly Asn Val Tyr Ile Asp Ala Lys Pro Tyr Asn Pro Val Val Ile Lys Ile Ser Phe Asn Gln Glu Thr Gln Asn Asn Cys 295 Val Tyr Ser Ile Ser Phe Asp Tyr Thr Leu Ser Lys Asp Tyr Pro Asn Met Gln Phe Asp Val Thr Leu Ser 325 <210> 36 <211> 341 <212> PRT Human Adenovirus 44 Fiber Protein <400> 36 Asn Ile Pro Phe Leu Thr Pro Pro Phe Val Ser Ser Asp Gly Phe Gln Asn Phe Pro Pro Gly Val Leu Ser Leu Lys Leu Ala Asp Pro Ile Thr Ile Thr Asn Gly Asn Val Ser Leu Lys Val Gly Gly Leu Thr Leu Gln Glu Gly Thr Gly Asp Leu Lys Val Asn Ala Lys Ser Pro Leu Gln 55

Val Ala Thr Asn Lys Gln Leu Glu Ile Ala Leu Ala Lys Pro Phe Glu

Glu Lys Asp Gly Lys Leu Ala Leu Lys Ile Gly His Gly Leu Ala Val

Val Asp Glu Asn His Thr His Leu Gln Ser Leu Ile Gly Thr Leu Val Ile Leu Thr Gly Lys Gly Ile Gly Thr Gly Ser Ala Glu Ser Gly Gly Thr Ile Asp Val Arg Leu Gly Ser Gly Gly Gly Leu Ser Phe Asp Lys Asp Gly Asn Leu Val Ala Trp Asn Lys Asp Asp Asp Arg Thr Leu Trp Thr Thr Pro Asp Pro Ser Pro Asn Cys Lys Ile Asp Gln Asp Lys Asp Ser Lys Leu Thr Phe Val Leu Thr Lys Cys Gly Ser Gln Ile Leu 185 180 Ala Asn Met Ser Leu Leu Val Val Lys Gly Lys Phe Ser Met Ile Asn 200 Asn Lys Val Asn Gly Thr Asp Asp Tyr Lys Lys Phe Thr Ile Lys Leu Leu Phe Asp Glu Lys Gly Val Leu Leu Lys Asp Ser Ser Leu Asp Lys Glu Tyr Trp Asn Tyr Arg Ser Asn Asn Asn Asn Val Gly Ser Ala Tyr Glu Glu Ala Val Gly Phe Met Pro Ser Thr Thr Ala Tyr Pro Lys Pro 265 Pro Thr Pro Pro Thr Asn Pro Thr Thr Pro Leu Glu Lys Ser Gln Ala Lys Asn Lys Tyr Val Ser Asn Val Tyr Leu Gly Gly Gln Ala Gly Asn Pro Val Ala Thr Thr Val Ser Phe Asn Lys Glu Thr Gly Cys Thr Tyr 310 315 Ser Ile Thr Phe Asp Phe Ala Trp Asn Lys Thr Tyr Glu Asn Val Gln Phe Asp Ser Ser Phe 340 <210> 37 345 <211> <212> PRT <213> Human Adenovirus 45 Fiber Protein <400> Asn Ile Pro Phe Leu Thr Pro Pro Phe Val Ser Ser Asp Gly Phe Gln Asn Phe Pro Pro Gly Val Leu Ser Leu Lys Leu Ala Asp Pro Ile Ala Ile Thr Asn Gly Asp Val Ser Leu Lys Val Gly Gly Leu Thr Val

Glu Lys Asp Ser Gly Asn Leu Lys Val Asn Pro Lys Ala Pro Leu Gln

50 55 60

Val Thr Thr Asp Lys Gln Leu Glu Ile Ala Leu Ala Tyr Pro Phe Glu Val Ser Asn Gly Lys Leu Gly Ile Lys Ala Gly His Gly Leu Lys Val Ile Asp Lys Ile Ala Gly Leu Glu Gly Leu Ala Gly Thr Leu Val Val Leu Thr Gly Lys Gly Ile Gly Thr Glu Asn Leu Glu Asn Ser Asp Gly Ser Ser Arg Gly Val Gly Ile Asn Val Arg Leu Ala Lys Asp Gly Val 135 Leu Ala Phe Asp Lys Lys Gly Asp Leu Val Ala Trp Asn Lys His Asp Asp Arg Arg Thr Leu Trp Thr Thr Pro Asp Pro Ser Pro Asn Cys Thr 170 Ile Asp Gln Glu Arg Asp Ser Lys Leu Thr Leu Val Leu Thr Lys Cys Gly Ser Gln Ile Leu Ala Asn Val Ser Leu Leu Val Val Lys Gly Lys Phe Ser Asn Ile Asn Asn Asn Ala Asn Pro Thr Asp Lys Lys Ile Thr Val Lys Leu Leu Phe Asn Glu Lys Gly Val Leu Met Asp Ser Ser Thr Leu Lys Lys Glu Tyr Trp Asn Tyr Arg Asn Asp Asn Ser Thr Val Ser 250 Gln Ala Tyr Asp Asn Ala Val Pro Phe Met Pro Asn Ile Lys Ala Tyr 265 Pro Lys Pro Ser Thr Asp Thr Ser Ala Lys Pro Glu Asp Lys Lys Ser Ala Ala Lys Arg Tyr Ile Val Ser Asn Val Tyr Ile Gly Gly Leu Pro Asp Lys Thr Val Val Ile Thr Ile Lys Phe Asn Ala Glu Thr Glu Cys 310 Ala Tyr Ser Ile Thr Phe Glu Phe Thr Trp Ala Lys Thr Phe Glu Asp 330 Val Gln Cys Asp Ser Ser Ser Phe Thr 340 <210> 38 <211> 339 PRT <212> Human Adenovirus 46 Fiber Protein <213> <400> 38

Asn Ile Pro Phe Leu Thr Pro Pro Phe Val Ser Ser Asp Gly Phe Lys
1 10 15

Asn Phe Pro Pro Gly Val Leu Ser Leu Lys Leu Ala Asp Pro Ile Ala Ile Val Asn Gly Asp Val Ser Leu Lys Val Gly Gly Leu Thr Leu Gln Glu Gly Asn Leu Thr Val Asp Ala Lys Ala Pro Leu Gln Val Ala Asn Asp Lys Leu Glu Leu Ser Tyr Ala Asp Phe Phe Glu Val Lys Asp Thr Lys Leu Gln Leu Lys Val Gly His Gly Leu Lys Val Ile Asp Glu Lys Thr Ser Ser Gly Leu Gln Ser Leu Ile Gly Asn Leu Val Val Leu Thr Gly Lys Gly Ile Gly Thr Gln Glu Leu Lys Asp Lys Asp Asp Glu 120 Thr Lys Asn Ile Gly Val Gly Ile Asn Val Arg Ile Gly Lys Asn Glu Ser Leu Ala Phe Asp Lys Asp Gly Asn Leu Val Ala Trp Asp Asn Glu Asn Asp Arg Arg Thr Leu Trp Thr Thr Pro Asp Thr Ser Ser Lys Phe 170 Val Lys Ile Ser Thr Glu Lys Asp Ser Lys Leu Thr Leu Val Leu Thr 185 Lys Cys Gly Ser Gln Ile Leu Ala Ser Val Ser Leu Leu Ala Val Ala 200 Gly Ser Tyr Leu Asn Met Thr Ala Ser Thr Gln Lys Ser Ile Lys Val 215 Ser Leu Met Phe Asp Ser Lys Gly Leu Leu Met Thr Thr Ser Ser Ile Asp Lys Gly Tyr Trp Asn Tyr Arg Asn Lys Asn Ser Val Val Gly Thr 250 Ala Tyr Glu Asn Ala Ile Pro Phe Met Pro Asn Leu Val Ala Tyr Pro 265 Arg Pro Asn Thr Pro Asp Ser Lys Ile Tyr Ala Arg Ser Lys Ile Val Gly Asn Val Tyr Leu Ala Gly Leu Ala Tyr Gln Pro Ile Val Ile Thr 295 Val Ser Phe Asn Gln Glu Lys Asp Ala Ser Cys Ala Tyr Ser Ile Thr Phe Glu Phe Ala Trp Asn Lys Asp Tyr Val Gly Gln Phe Asp Thr Thr 330

Ser Phe Thr

<211> 389

<212> PRT

<213> Human Adenovirus 47 Fiber Protein

<400> 39

Ser Cys Pro Ser Ala Pro Thr Ile Phe Met Leu Gln Met Lys Arg
1 5 10 15

Ala Arg Pro Ser Glu Asp Thr Phe Asn Pro Val Tyr Pro Tyr Gly Tyr 20 25 30

Ala Arg Asn Gln Asn Ile Pro Phe Leu Thr Pro Pro Phe Val Ser Ser 35 40 45

Asp Gly Phe Lys Asn Phe Pro Pro Gly Val Leu Ser Leu Lys Leu Ala 50 55 60

Asp Pro Ile Thr Ile Thr Asn Gly Asp Val Ser Leu Lys Val Gly Gly 65 70 75 80

Gly Leu Thr Leu Gln Glu Gly Thr Gly Asn Leu Thr Val Asn Ala Lys 85 90 95

Ala Pro Leu Gln Val Ala Asp Asp Lys Lys Leu Glu Leu Ser Tyr Asp 100 105 110

Asn Pro Phe Glu Val Ser Ala Asn Lys Leu Ser Leu Lys Val Gly His 115 120 125

Gly Leu Lys Val Leu Asp Glu Lys Asn Ser Gly Gly Leu Gln Glu Leu 130 135 140

Ile Gly Lys Leu Val Ile Leu Thr Gly Lys Gly Ile Gly Val Glu Glu 145 150 155 160

Leu Lys Asn Ala Asp Asn Thr Asn Arg Gly Val Gly Ile Asn Val Arg 165 170 175

Leu Gly Lys Asp Gly Gly Leu Ser Phe Asp Lys Lys Gly Glu Leu Val

Ala Trp Asn Lys His Asn Asp Thr Arg Thr Leu Trp Thr Thr Pro Asp 195 200 205

Pro Ser Pro Asn Cys Lys Ile Glu Gln Asp Lys Asp Ser Lys Leu Thr 210 215 220

Leu Val Leu Thr Lys Cys Gly Ser Gln Ile Leu Ala Thr Met Ala Phe 225 230 235 240

Gln Val Val Lys Asp Thr Tyr Glu Asn Ile Ser Lys Asn Thr Ala Lys 245 250 255

Lys Ser Phe Ser Ile Lys Leu Leu Phe Asp Asp Asn Gly Lys Leu Leu 260 265 270

Glu Gly Ser Ser Leu Asp Lys Asp Tyr Trp Asn Phe Arg Asn Asp Asp 275 280 285

Ser Ile Met Pro Ser Gln Tyr Asp Asn Ala Val Pro Phe Met Pro Asn 290 295 300

Leu Lys Ala Tyr Pro Asn Pro Lys Thr Ser Thr Val Leu Pro Ser Thr 305 310 315 320

Asp Lys Lys Ser Asn Gly Lys Asn Thr Ile Val Ser Asn Leu Tyr Leu 325 330 335

Glu Gly Lys Ala Tyr Gln Pro Val Ala Val Thr Ile Thr Phe Asn Lys 340 345 350

Glu Tyr Gly Cys Thr Tyr Ser Ile Thr Phe Glu Phe Gly Trp Ala Lys 355 360 365

Thr Tyr Asp Val Pro Ile Pro Phe Asp Ser Ser Ser Phe Thr Phe Ser 370 375 380

Tyr Ile Ala Gln Glu 385

<210> 40

<211> 343

<212> PRT

<213> Human Adenovirus 48 Fiber Protein

<400> 40

Ser Asp Ile Pro Phe Leu Thr Pro Pro Phe Val Ser Ser Asp Gly Phe 1 5 10 15

Gln Asn Phe Pro Pro Gly Val Leu Ser Leu Lys Leu Ala Asp Pro Ile 20 25 30

Thr Ile Thr Asn Gly Asn Val Ser Leu Lys Val Gly Gly Gly Leu Thr 35 40 45

Leu Gln Glu Gly Thr Gly Asp Leu Lys Val Asn Ala Lys Ser Pro Leu 50 55 60

Gln Val Ala Thr Asn Lys Gln Leu Glu Ile Ala Leu Ala Lys Pro Phe 65 70 75 80

Glu Glu Lys Asp Gly Lys Leu Ala Leu Lys Ile Gly His Glu Leu Ala 85 90 95

Val Val Asp Glu Asn Leu Thr His Leu Gln Ser Leu Ile Gly Thr Leu 100 105 110

Val Ile Leu Thr Gly Lys Gly Ile Gly Thr Gly Arg Ala Glu Ser Gly
115 120 125

Gly Thr Ile Asp Val Arg Leu Gly Ser Gly Gly Leu Ser Phe Asp 130 135 140

Lys Asp Gly Asn Leu Val Ala Trp Asn Lys Asp Asp Asp Arg Arg Thr 145 150 155 160

Leu Trp Thr Thr Pro Asp Pro Ser Pro Asn Cys Lys Ile Asp Gln Asp 165 170 175

Lys Asp Ser Lys Leu Thr Phe Val Leu Thr Lys Cys Gly Ser Gln Ile 180 185 190

Leu Ala Asn Met Ser Leu Leu Val Val Lys Gly Lys Phe Ser Met Ile 195 200 205

Asn Asn Lys Val Asn Gly Thr Asp Asp Tyr Lys Lys Phe Thr Ile Lys 210 215 220

Leu Leu Phe Asp Glu Lys Gly Val Leu Leu Lys Asp Ser Ser Leu Asp 230 Lys Glu Tyr Trp Asn Tyr Arg Ser Asn Asn Asn Asn Val Gly Ser Ala 250 Tyr Glu Glu Ala Val Gly Phe Met Pro Ser Thr Thr Ala Tyr Pro Lys 260 265 Pro Pro Thr Pro Pro Thr Asn Pro Thr Thr Pro Leu Glu Lys Ser Gln Ala Lys Asn Lys Tyr Val Ser Asn Val Tyr Leu Gly Gly Gln Ala Gly 295 Asn Pro Val Ala Thr Thr Val Ser Phe Asn Lys Glu Thr Gly Cys Thr 310 Tyr Ser Ile Thr Phe Asp Phe Ala Trp Asn Lys Thr Tyr Lys Met Ala 330 Phe Ile Pro Arg Phe Asn Phe 340 <210> 41 <211> 393 <212> PRT Human Adenovirus 49 Fiber Protein <220> <221> Xaa <222> (262)..(262) Can be any nucleic acid <223> <400> 41 Ser Cys Ser Cys Pro Ser Ala Pro Thr Ile Phe Met Leu Gln Met Lys Arg Ala Arg Pro Ser Glu Asp Thr Phe Asn Pro Val Tyr Pro Tyr 25 Gly Tyr Ala Arg Asn Gln Asn Ile Pro Phe Leu Thr Pro Pro Phe Val Ser Ser Asp Gly Phe Gln Asn Phe Pro Pro Gly Val Leu Ser Leu Lys Leu Ala Asp Pro Ile Ala Ile Thr Asn Gly Asn Val Ser Leu Lys Val Gly Gly Leu Thr Val Glu Gln Asp Ser Gly Asn Leu Lys Val Asn Pro Lys Ala Pro Leu Gln Val Ala Thr Asp Asn Gln Leu Glu Ile Ser 105 Leu Ala Asp Pro Phe Glu Val Lys Asn Lys Lys Leu Ser Leu Lys Val Gly His Gly Leu Lys Val Ile Asp Glu Asn Ile Ser Thr Leu Gln Gly

Leu Leu Gly Asn Leu Val Val Leu Thr Gly Met Gly Ile Gly Thr Glu

145 150 155 160

Glu Leu Lys Lys Asp Asp Lys Ile Val Gly Ser Ala Val Asn Val Arg 165 170 175

Leu Gly Gln Asp Gly Gly Leu Thr Phe Asp Lys Lys Gly Asp Leu Val

Ala Trp Asn Lys Glu Asn Asp Arg Arg Thr Leu Trp Thr Thr Pro Asp 195 200 205

Pro Ser Pro Asn Cys Lys Val Ser Glu Glu Lys Asp Ser Lys Leu Thr 210 215 220

Leu Val Leu Thr Lys Cys Gly Ser Gln Ile Leu Ala Ser Val Ser Leu 225 230 235 240

Leu Val Val Lys Gly Lys Phe Ala Asn Ile Asn Asn Lys Thr Asn Pro 245 250 255

Gly Glu Asp Tyr Lys Xaa Phe Ser Val Lys Leu Leu Phe Asp Ala Asn 260 265 270

Gly Lys Leu Leu Thr Gly Ser Ser Leu Asp Gly Asn Tyr Trp Asn Tyr 275 280 285

Lys Asn Lys Asp Ser Val Ile Gly Ser Pro Tyr Glu Asn Ala Val Pro 290 295 300

Phe Met Pro Asn Ser Thr Ala Tyr Pro Lys Ile Ile Asn Gly Thr Ala 305 310 315 320

Asn Pro Glu Asp Lys Lys Ser Ala Ala Lys Lys Thr Ile Val Thr Asn 325 330 335

Val Tyr Leu Gly Gly Asp Ala Ala Lys Pro Val Ala Thr Thr Ile Ser 340 345 350

Phe Asn Lys Glu Thr Glu Ser Asn Cys Val Tyr Ser Ile Thr Phe Asp 355 360 365

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Leu Thr Phe Ser Tyr Ile Ala Gln Glu 385 390

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<212> PRT

<213> Human Adenovirus 52 Fiber Protein

<400> 42

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Lys Arg Ala Arg Pro Ser Glu Asp Thr Phe Asn Pro Val Tyr Pro Tyr 20 25 30

Glu Asp Glu Ser Thr Ser Gln His Pro Phe Ile Asn Pro Gly Phe Ile 35 40 45

Ser Pro Asn Gly Phe Thr Gln Ser Pro Asp Gly Val Leu Thr Leu Asn 50 55 60

Cys Leu Thr Pro Leu Thr Thr Gly Gly Pro Leu Gln Leu Lys Val Gly Gly Leu Ile Val Asp Asp Thr Asp Gly Thr Leu Gln Glu Asn Ile Arg Val Thr Ala Pro Ile Thr Lys Asn Asn His Ser Val Glu Leu Ser Ile Gly Asn Gly Leu Glu Thr Gln Asn Asn Lys Leu Cys Ala Lys 120 Leu Gly Asn Gly Leu Lys Phe Asn Asn Gly Asp Ile Cys Ile Lys Asp 135 Ser Ile Asn Thr Leu Trp Thr Gly Ile Lys Pro Pro Pro Asn Cys Gln 150 Ile Val Glu Asn Thr Asp Thr Asn Asp Gly Lys Leu Thr Leu Val Leu Val Lys Asn Gly Gly Leu Val Asn Gly Tyr Val Ser Leu Val Gly Val Ser Asp Thr Val Asn Gln Met Phe Thr Gln Lys Ser Ala Thr Ile Gln Leu Arg Leu Tyr Phe Asp Ser Ser Gly Asn Leu Leu Thr Asp Glu Ser Asn Leu Lys Ile Pro Leu Lys Asn Lys Ser Ser Thr Ala Thr Ser Glu 230 235 Ala Ala Thr Ser Ser Lys Ala Phe Met Pro Ser Thr Thr Ala Tyr Pro Phe Asn Thr Thr Thr Arg Asp Ser Glu Asn Tyr Ile His Gly Ile Cys Tyr Tyr Met Thr Ser Tyr Asp Arg Ser Leu Val Pro Leu Asn Ile Ser Ile Met Leu Asn Ser Arg Thr Ile Ser Ser Asn Val Ala Tyr Ala Ile Gln Phe Glu Trp Asn Leu Asn Ala Lys Glu Ser Pro Glu Ser Asn Ile 310 315 Ala Thr Leu Thr Thr Ser Pro Phe Phe Ser Tyr Ile Ile Glu Asp

Thr Thr Lys Cys Ile Ser Leu Cys Tyr Val Ser Thr Cys Leu Phe Phe 345

Asn

43 <210>

958 <211>

<212>

Human Adenovirus 34 Hexon Protein

340

<400> 43

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Tyr Asn Ser Thr Gly Asn Met Gly Val Leu Ala Gly Gln Ala Ser Gln Leu Asn Ala Val Val Asp Leu Gln Asp Arg Asn Thr Glu Leu Ser Tyr Gln Leu Leu Asp Ser Leu Gly Asp Arg Thr Arg Tyr Phe Ser Met Trp Asn Gln Ala Val Asp Ser Tyr Asp Pro Asp Val Arg Val Ile Glu Asn His Gly Val Glu Asp Glu Leu Pro Asn Tyr Cys Phe Pro Leu Asp Gly Val Gly Pro Arg Thr Asp Ser Tyr Lys Glu Ile Lys Pro Asn Gly Asp Gln Ser Thr Trp Thr Asn Val Asp Pro Thr Gly Ser Ser Glu Leu Ala Lys Gly Asn Pro Phe Ala Met Glu Ile Asn Leu Gln Ala Asn Leu Trp Arg Ser Phe Leu Tyr Ser Asn Val Ala Leu Tyr Leu Pro Asp Ser Tyr Lys Tyr Thr Pro Ser Asn Val Thr Leu Pro Glu Asn Lys Asn Thr Tyr Asp Tyr Met Asn Gly Arg Val Val Pro Pro Ser Leu Val Asp Thr Tyr 520 Val Asn Ile Gly Ala Arg Trp Ser Leu Asp Ala Met Asp Asn Val Asn Pro Phe Asn His His Arg Asn Ala Gly Leu Arg Tyr Arg Ser Met Leu Leu Gly Asn Gly Arg Tyr Val Pro Phe His Ile Gln Val Pro Gln Lys Phe Phe Ala Val Lys Asn Leu Leu Leu Pro Gly Ser Tyr Thr Tyr 585 Glu Trp Asn Phe Arg Lys Asp Val Asn Met Val Leu Gln Ser Ser Leu 600 Gly Asn Asp Leu Arg Val Asp Gly Ala Ser Ile Ser Phe Thr Ser Ile Asn Leu Tyr Ala Thr Phe Phe Pro Met Ala His Asn Thr Ala Ser Thr 630 635 Leu Glu Ala Met Leu Arg Asn Asp Thr Asn Asp Gln Ser Phe Asn Asp 650 Tyr Leu Ser Ala Ala Asn Met Leu Tyr Pro Ile Pro Ala Asn Ala Thr Asn Ile Pro Ile Ser Ile Pro Ser Arg Asn Trp Ala Ala Phe Arg Gly Trp Ser Phe Thr Arg Leu Lys Thr Lys Glu Thr Pro Ser Leu Gly Ser 690 695 700

Gly Phe Asp Pro Tyr Phe Val Tyr Ser Gly Ser Ile Pro Leu Asp Gly 710 Thr Phe Tyr Leu Asn His Thr Phe Lys Lys Val Ser Ile Met Phe Asp Ser Ser Val Ser Trp Pro Gly Asn Asp Arg Leu Leu Ser Pro Asn Glu Phe Glu Ile Lys Arg Thr Val Asp Gly Glu Gly Tyr Asn Val Ala Gln Cys Asn Met Thr Asp Trp Phe Leu Val Gln Met Leu Ala Asn Tyr Asn Ile Gly Tyr Gln Gly Phe Tyr Ile Pro Glu Gly Tyr Lys Asp Arg Met Tyr Ser Phe Phe Arg Asn Phe Gln Pro Met Ser Arg Gln Val Val Asp 810 Glu Val Asn Lys Tyr Asp Phe Lys Ala Val Ile Pro Tyr Gln His Asn 825 Asn Ser Gly Phe Val Gly Tyr Met Ala Pro Thr Met Arg Gln Gly Gln Tyr Pro Ala Asn Tyr Pro Tyr Pro Leu Ile Gly Thr Thr Ala Val Asn Ser Val Thr Gln Lys Lys Phe Leu Cys Asp Arg Thr Met Trp Arg Ile Pro Phe Ser Ser Asn Phe Met Ser Met Gly Ala Leu Thr Asp Leu Gly 890 Gln Asn Met Leu Tyr Ala Asn Ser Ala His Ala Leu Asp Met Thr Phe 900 905 Glu Val Asp Pro Met Asp Glu Pro Thr Leu Leu Tyr Leu Leu Phe Glu Val Phe Asp Val Val Arg Val Gln Pro His Arg Gly Ile Ile Glu Ala Val Tyr Leu Arg Thr Pro Phe Ser Ala Gly Asn Ala Thr Thr 950 <210> 44 <211> <212> PRT Human Adenovirus 35 Hexon Protein <213> <400>

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Ser Met Leu Pro Gln Trp Ala Tyr Met His Ile Ala Gly Gln Asp Ala

Ser Glu Tyr Leu Ser Pro Gly Leu Val Gln Phe Ala Arg Ala Thr Asp

Thr Tyr Phe Asn Leu Gly Asn Lys Phe Arg Asn Pro Thr Val Ala Pro 50 60

Thr His Asp Val Thr Thr Asp Arg Ser Gln Arg Leu Met Leu Arg Phe 70 75 80

Val Pro Val Asp Arg Glu Asp Asn Thr Tyr Ser Tyr Lys Val Arg Tyr 85 90 95

Thr Leu Ala Val Gly Asp Asn Arg Val Leu Asp Met Ala Ser Thr Phe 100 105 110

Phe Asp Ile Arg Gly Val Leu Asp Arg Gly Pro Ser Phe Lys Pro Tyr 115 120 125

Ser Gly Thr Ala Tyr Asn Ser Leu Ala Pro Lys Gly Ala Pro Asn Ala 130 135 140

Ser Gln Trp Leu Asp Lys Gly Val Thr Ser Thr Gly Leu Val Asp Asp 145 150 155 160

Gly Asn Thr Asp Asp Gly Glu Glu Ala Lys Lys Ala Thr Tyr Thr Phe 165 170 175

Gly Asn Ala Pro Val Lys Ala Glu Ala Glu Ile Thr Lys Asp Gly Leu 180 185 190

Pro Val Gly Leu Glu Val Ser Thr Glu Gly Pro Lys Pro Ile Tyr Ala 195 200 205

Asp Lys Leu Tyr Gln Pro Glu Pro Gln Val Gly Asp Thr Trp Thr Asp 210 215 220

Leu Asp Gly Lys Thr Glu Glu Tyr Gly Gly Arg Val Leu Lys Pro Glu 225 230 235 240

Thr Lys Met Lys Pro Cys Tyr Gly Ser Phe Ala Lys Pro Thr Asn Ile 245 250 255

Lys Gly Gln Ala Lys Val Lys Pro Lys Glu Asp Asp Gly Thr Asn 260 265 270

Asn Ile Tyr Asp Ile Asp Met Asn Phe Phe Asp Leu Arg Ser Gln Arg 275 280 285

Ser Glu Leu Lys Pro Lys Ile Val Met Tyr Ala Glu Asn Val Asp Leu 290 295 300

Glu Cys Pro Asp Thr His Val Val Tyr Lys Pro Gly Val Ser Asp Ala 305 310 315 320

Ser Ser Glu Thr Asn Leu Gly Gln Gln Met Pro Asn Arg Pro Asn Tyr 325 330 335

Ile Gly Phe Arg Asp Asn Phe Ile Gly Leu Met Tyr Tyr Asn Ser Thr 340 345 350

Gly Asn Met Gly Val Leu Ala Gly Gln Ala Ser Gln Leu Asn Ala Val 355 360 365

Val Asp Leu Gln Asp Arg Asn Thr Glu Leu Ser Tyr Gln Leu Leu Leu 370 375 380

Ser Leu Gly Asp Arg Thr Arg Tyr Phe Ser Met Trp Asn Gln Ala Val

385 390 395 400

Asp Ser Tyr Asp Pro Asp Val Arg Val Ile Glu Asn His Gly Val Glu 410 Asp Glu Leu Pro Asn Tyr Cys Phe Pro Leu Asp Gly Val Gly Pro Arg 425 Thr Asp Ser Tyr Lys Glu Ile Pro Asn Gly Asp Gln Ser Thr Trp Thr Asn Val Asp Pro Thr Gly Ser Ser Glu Leu Ala Lys Gly Asn Pro Phe Ala Met Glu Ile Asn Leu Gln Ala Asn Leu Trp Arg Ser Phe Leu Tyr 470 Ser Asn Val Ala Leu Tyr Leu Pro Asp Ser Tyr Lys Tyr Thr Ser Asn Val Thr Leu Pro Glu Asn Lys Asn Thr Tyr Asp Tyr Met Asn Gly Arg Val Val Pro Pro Ser Leu Val Asp Thr Tyr Val Asn Ile Gly Ala Arg Trp Ser Leu Asp Ala Met Asp Asn Val Asn Pro Phe Asn His His Arg Asn Ala Gly Arg Tyr Arg Ser Met Leu Leu Gly Asn Gly Arg Tyr Val Pro Phe His Ile Gln Val Pro Gln Lys Phe Phe Ala Val Lys Asn Leu Leu Leu Pro Gly Ser Tyr Thr Tyr Glu Trp Asn Phe Arg Lys Asp Val Asn Met Val Leu Gln Ser Ser Leu Asp Leu Arg Val Asp Gly Ala 600 Ser Ile Ser Phe Thr Ser Ile Asn Leu Tyr Ala Thr Phe Phe Pro Met Ala His Asn Thr Ala Ser Thr Leu Glu Ala Met Leu Arg Asn Asp Thr Asn Asp Gln Ser Phe Asn Asp Tyr Leu Ser Ala Ala Asn Met Leu Tyr 650 645 Pro Ile Ala Asn Ala Thr Asn Ile Pro Ile Ser Ile Pro Ser Arg Asn 665 Trp Ala Ala Phe Arg Gly Trp Phe Thr Arg Leu Lys Thr Lys Glu Thr Pro Ser Leu Gly Ser Gly Phe Asp Pro Tyr Phe Val Tyr Ser Gly Ser 695 Ile Pro Tyr Leu Asp Gly Thr Phe Tyr Leu His Thr His Lys Lys Val Ser Ile Met Phe Asp Ser Ser Val Ser Trp Pro Gly Asn Asp Arg Leu 730

Leu Ser Pro Asn Glu Phe Glu Ile Lys Arg Thr Val Asp Gly Glu Gly 740 745 Tyr Asn Val Ala Gln Cys Asn Met Thr Lys Asp Trp Phe Leu Val Trp Leu Ala Asn Tyr Asn Ile Gly Tyr Gln Gly Phe Tyr Ile Pro Glu Gly Tyr Lys Asp Arg Met Tyr Ser Phe Phe Arg Asn Phe Gln Pro Met Ser Arg Gln Val Val Asp Glu Val Asn Tyr Lys Asp Phe Lys Ala Val Ala Ile Pro Tyr Gln His Asn Asn Gly Phe Val Gly Tyr Met Ala Pro Thr 820 Met Arg Gln Gly Gln Pro Tyr Pro Ala Asn Tyr Pro Tyr Pro Leu Ile Gly Thr Thr Ala`Val Asn Ser Val Thr Gln Lys Lys Phe Leu Cys Asp Arg Thr Met Trp Arg Ile Pro Phe Ser Ser Asn Phe Met Ser Ala Leu 870 875 Thr Asp Leu Gly Gln Asn Met Leu Tyr Ala Asn Ser Ala His Ala Leu Asp Met Thr Phe Glu Val Asp Pro Met Asp Glu Pro Thr Leu Leu Tyr 900 905 Leu Leu Phe Glu Val Phe Asp Val Val Arg Val His Gln Pro His Arg Gly Ile Ile Glu Ala Val Leu Arg Thr Pro Phe Ser Ala Gly Asn Ala 930 Thr Thr 945 <210> 45 <211> 952 <212> PRT Human Adenovirus 36 Hexon Protein <213> Leu Ser Arg Arg Ala Pro Gly Phe Pro Leu Val Lys Met Ala Thr Pro Ser Met Leu Pro Gln Trp Ala Tyr Met His Ile Ala Gly Gln Asp Ala 25 Ser Glu Tyr Leu Ser Pro Gly Leu Val Gln Phe Ala Arg Ala Thr Asp Thr Tyr Phe Asn Leu Gly Asn Lys Phe Arg Asn Pro Thr Val Ala Pro Thr His Asp Val Thr Thr Asp Arg Ser Gln Arg Leu Met Leu Arg Phe

Val Pro Val Asp Arg Glu Asp Asn Thr Tyr Ser Tyr Lys Val Arg Tyr

Thr Leu Ala Val Gly Asp Asn Arg Val Leu Asp Met Ala Ser Thr Phe 105 Phe Asp Ile Arg Gly Val Leu Asp Arg Gly Pro Ser Phe Lys Pro Tyr Ser Gly Thr Ala Tyr Asn Ser Leu Ala Pro Lys Gly Ala Pro Asn Ala Ser Gln Trp Leu Asp Lys Gly Val Thr Ser Thr Gly Leu Val Asp Asp Gly Asn Thr Asp Asp Gly Glu Glu Ala Lys Lys Ala Thr Tyr Thr Phe Gly Asn Ala Pro Val Lys Ala Glu Ala Glu Ile Thr Lys Asp Gly Leu Pro Val Gly Leu Glu Val Ser Thr Glu Gly Pro Lys Pro Ile Tyr Ala 200 Asp Lys Leu Tyr Gln Pro Glu Pro Gln Val Gly Asp Thr Trp Thr Asp 215 Leu Asp Gly Lys Thr Glu Glu Tyr Gly Gly Arg Val Leu Lys Pro Glu Thr Lys Met Lys Pro Cys Tyr Gly Ser Phe Ala Lys Pro Thr Asn Ile Lys Gly Gln Ala Lys Val Lys Pro Lys Glu Asp Asp Gly Thr Asn Asn Ile Tyr Asp Ile Asp Met Asn Phe Phe Asp Leu Arg Ser Gln Arg 280 Ser Glu Leu Lys Pro Lys Ile Val Met Tyr Ala Glu Asn Val Asp Leu 295 Glu Cys Pro Asp Thr His Val Val Tyr Lys Pro Gly Val Ser Asp Ala Ser Ser Glu Thr Asn Leu Gly Gln Gln Ser Met Pro Asn Arg Pro Asn Tyr Ile Gly Phe Arg Asp Asn Phe Ile Gly Leu Met Tyr Tyr Asn Ser 350 Thr Gly Asn Met Gly Val Leu Ala Gly Gln Ala Ser Gln Leu Asn Ala Val Val Asp Leu Gln Asp Arg Asn Thr Glu Leu Ser Tyr Gln Leu Leu Asp Ser Leu Gly Asp Arg Thr Arg Tyr Phe Ser Met Trp Asn Gln Ala 395 390 Val Asp Ser Tyr Asp Pro Asp Val Arg Val Ile Glu Asn His Gly Val Glu Asp Glu Leu Pro Asn Tyr Cys Phe Pro Leu Asp Gly Val Gly Pro 425

Arg Thr Asp Ser Tyr Lys Ile Lys Pro Asn Gly Asp Gln Ser Thr Trp Thr Asn Val Asp Pro Thr Gly Ser Ser Glu Leu Ala Lys Gly Asn Pro 455 Phe Ala Met Glu Ile Asn Leu Gln Ala Asn Leu Trp Arg Ser Phe Leu 470 475 Tyr Ser Asn Val Ala Leu Tyr Leu Pro Asp Ser Tyr Lys Tyr Thr Pro Ser Asn Val Thr Leu Pro Glu Asn Lys Asn Thr Tyr Asp Tyr Met Asn Gly Arg Val Val Pro Pro Ser Leu Val Asp Thr Tyr Val Asn Ile Gly 520 Ala Arg Trp Ser Leu Asp Ala Met Asp Asn Val Asn Pro Phe Asn His 535 His Arg Ala Gly Leu Arg Tyr Arg Ser Met Leu Leu Gly Asn Gly Arg Tyr Val Pro Phe His Ile Gln Val Pro Gln Lys Phe Phe Ala Val Lys 565 Asn Leu Leu Leu Pro Gly Ser Tyr Thr Tyr Glu Trp Asn Phe Arg Lys Asp Val Asn Met Val Leu Gln Ser Leu Gly Asn Asp Leu Arg Val 600 Asp Gly Ala Ser Ile Ser Phe Thr Ser Ile Asn Leu Tyr Ala Thr Phe Phe Pro Met Ala His Asn Thr Ala Ser Thr Leu Glu Ala Met Leu Arg 630 Asn Asp Thr Asn Asp Gln Ser Phe Asn Asp Tyr Leu Ser Ala Ala Asn 650 645 Met Leu Tyr Pro Ile Pro Ala Asn Ala Thr Asn Ile Pro Ile Ser Ile Pro Ser Arg Asn Trp Ala Ala Phe Arg Gly Trp Ser Phe Thr Arg Leu Lys Thr Lys Glu Thr Pro Ser Leu Gly Ser Gly Phe Asp Pro Tyr Phe 695 Val Tyr Ser Gly Ser Ile Pro Tyr Asp Gly Thr Phe Tyr Leu Asn His Thr Phe Lys Lys Val Ser Ile Met Phe Asp Ser Ser Val Ser Trp Pro Gly Asn Asp Arg Leu Leu Ser Pro Asn Glu Phe Glu Ile Lys Arg Thr Val Asp Gly Asp Gly Tyr Asn Val Ala Gln Cys Asn Met Thr Lys Trp 760 Phe Leu Val Gln Met Leu Ala Asn Tyr Asn Ile Gly Tyr Gln Gly Phe

Tyr Ile Pro Glu Gly Tyr Lys Asp Arg Met Tyr Ser Phe Phe Arg Asn 785 790 795 800

Phe Gln Pro Met Ser Arg Gln Val Val Asp Glu Val Asn Tyr Lys Asp 805 810 815

Phe Lys Ala Val Ile Tyr Gln His Asn Asn Ser Gly Phe Val Gly Tyr 820 825 830

Met Ala Pro Thr Met Arg Gln Gly Gln Pro Tyr Pro Ala Asn Tyr Pro 835 840 845

Tyr Pro Leu Ile Gly Thr Thr Ala Val Asn Ser Val Thr Gln Lys Lys 850 855 860

Phe Leu Cys Asp Arg Thr Met Trp Arg Ile Pro Phe Ser Ser Asn Phe 865 870 875 880

Met Ser Met Gly Ala Leu Thr Asp Leu Gly Gln Asn Met Leu Tyr Ala 885 890 895

Asn Ser Ala His Ala Leu Asp Met Thr Phe Glu Val Asp Pro Met Asp 900 905 910

Glu Pro Thr Leu Leu Tyr Leu Leu Phe Glu Val Phe Asp Val Val Arg 915 920 925

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Ala Tyr Met His Ile Ala Gly Gln Asp Ala Ser Glu Tyr Leu Ser Pro 35 40 45

Gly Leu Val Gln Phe Ala Arg Ala Thr Asp Thr Tyr Phe Ser Leu Gly 50 55 60

Asn Lys Phe Arg Asn Pro Thr Val Ala Pro Thr His Asp Val Thr Thr 65 70 75 80

Asp Arg Ser Gln Arg Leu Thr Leu Arg Phe Ser Pro Ser Asp Arg Glu 85 90 95

Asp Thr Thr Tyr Ser Tyr Lys Ala Arg Phe Thr Leu Ala Gly Asp Asn 100 105 110

Arg Val Leu Asp Met Ala Ser Thr Tyr Phe Asp Ile Arg Gly Val Leu 115 120 125

Asp Arg Gly Pro Ser Phe Lys Pro Tyr Ser Gly Thr Ala Tyr Asn Ser 135 Leu Ala Pro Lys Gly Ala Pro Asn Ser Ser Gln Trp Ala Asp Lys Glu Arg Val Asn Gly Gly Gly Asn Thr Lys Asp Val Thr Lys Thr Phe Gly Val Ala Ala Met Gly Gly Glu Asp Ile Thr Glu Lys Gly Leu Lys Ile Gly Thr Asp Thr Thr Ala Asn Glu Pro Ile Phe Ala Asp Lys Asn Phe Gln Pro Glu Pro Gln Val Gly Glu Glu Asn Gln Glu Thr Phe Val Phe 215 Tyr Gly Gly Arg Ala Leu Lys Lys Glu Thr Lys Met Lys Pro Cys Tyr Gly Ser Phe Ala Arg Pro Thr Asn Glu Lys Gly Gln Ala Lys Phe Ile Ile Gly Asp Asn Gly Gln Pro Thr Glu Asn His Asp Ile Thr Met 265 Ala Phe Asp Thr Pro Gly Gly Thr Ile Thr Gly Gly Thr Gly Pro Gln Asp Glu Leu Lys Ala Asp Ile Val Met Tyr Thr Glu Asn Ile Asn 295 Leu Glu Thr Pro Asp Thr His Val Val Tyr Lys Pro Gly Lys Glu Asp Asp Ser Ser Glu Ile Asn Leu Val Gln Ser Met Pro Asn Arg Pro Asn 325 330 Tyr Ile Gly Phe Arg Asp Asn Phe Val Gly Leu Met Tyr Tyr Asn Ser 345 Thr Gly Asn Met Gly Val Leu Ala Gly Gln Ala Ser Gln Leu Asn Ala Val Val Asp Leu Gln Asp Arg Asn Thr Glu Leu Ser Tyr Gln Leu Leu 375 Asp Ser Leu Gly Asp Arg Thr Arg Tyr Phe Ser Met Trp Asn Ser Ala 390 395 Val Asp Ser Tyr Asp Pro Asp Val Arg Ile Ile Glu Asn His Gly Val Glu Asp Glu Leu Pro Asn Tyr Cys Phe Pro Leu Asp Gly Ser Gly Thr 425 Asn Ser Ala Phe Gln Gly Lys Ile Lys Gln Asn Gln Asp Gly Asp Val 435 Asn Asp Asp Trp Glu Lys Asp Asp Lys Val Ser Thr Gln Asn Gln Ile

Cys Lys Gly Asn Glu Tyr Ala Met Glu Ile Asn Leu Gln Ala Asn Leu

Trp Lys Ser Phe Leu Tyr Ser Asn Val Ala Leu Tyr Leu Asp Ser Tyr Lys Tyr Thr Pro Ala Asn Val Thr Leu Pro Thr Asn Thr Asn Thr Glu 505 Tyr Met Asn Gly Arg Val Val Ala Pro Ser Leu Val Asp Ala Tyr Ile 520 Asn Ile Gly Ala Arg Trp Ser Leu Asp Pro Met Asp Asn Val Asn Pro Phe Asn His Arg Asn Ala Gly Leu Arg Tyr Arg Ser Asn Ala Ser Gly 555 Gln Arg Pro Leu Arg Ala Leu Pro His Pro Ser Ala Pro Lys Val Leu Cys His Gln Glu Pro Ala Pro Ala Pro Gly Leu Leu His Leu Arg Val Glu Leu Pro Gln Gly Arg Gln His Asp Ala Glu Phe Pro Arg Lys Arg 600 Pro Ala Arg Arg Arg Leu Arg Ala Leu Arg Gln Arg Gln Pro Leu Cys His Ile Leu Pro His Gly Ala Gln His Arg Leu His Pro Gly Ser His Ala Ala Gln Arg His Gln Arg Pro Val Leu Gln Arg Leu Pro Leu Arg Gln His Ala Leu Pro His Pro Gly Gln Gly His Gln Arg Ala His Leu His Pro Ala Gln Leu Gly Arg Leu Ser Arg Leu Glu Phe His Pro Ala Gln Asp Gln Gly Asn Ser Phe Pro Arg Leu Gly Phe Arg Pro Leu Leu Cys Leu Leu Gly Leu His Pro Leu Pro Arg Arg Asp Leu Leu Pro 715 Gln Pro His Leu Gln Glu Gly Leu His His Val Arg Leu Leu Gly Gln 730 Leu Ala Arg Gln Arg Thr Ala Val Thr Pro Asn Glu Phe Glu Ile Lys Arg Ser Val Asp Gly Glu Gly Tyr Asn Val Ala Gln Cys Met Thr Lys 760 Asp Trp Phe Leu Val Gln Met Leu Ser His Tyr Asn Ile Gly Tyr Gln Gly Phe His Val Pro Glu Gly Tyr Lys Asp Arg Met Tyr Ser Phe Phe 795 790 Arg Asn Phe Gln Pro Met Ser Arg Gln Val Val Asp Glu Ile Asn Tyr

Lys Asp Tyr Ala Val Thr Leu Pro Phe Gln His Asn Asn Ser Gly Phe

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Thr	Gly	Tyr 835	Leu	Ala	Pro	Thr	Met 840	Arg	Gln	Gly	Gln	Pro 845	Tyr	Pro	Ala		
Asn	Phe 850	Pro	Leu	Ile	Gly	Ser 855	Thr	Ala	Val	Pro	Ser 860	Val	Thr	Gln	Lys		
Lys 865	Phe	Leu	Cys	Asp	Arg 870	Val	Met	Trp	Arg	Ile 875	Pro	Phe	Ser	Ser	Asn 880		
Phe	Met	Ser	Met	Gly 885	Ala	Leu	Thr	Asp	Leu 890	Gly	Gln	Asn	Met	Leu 895	Tyr		
Ala	Asn	Ser	Ala 900	His	Ala	Leu	Asp	Ile 905	Thr	Phe	Glu	Val	Asp 910	Pro	Met		
Asp	Glu	Pro 915	Thr	Leu	Leu	Tyr	Leu 920	Leu	Phe	Glu	Val	Phe 925	Asp	Val	Val		
Val	His 930	Gln	Pro	His	Arg	Gly 935	Val	Ile	Glu	Ala	Val 940	Tyr	Leu	Arg	Thr		
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